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THE 1971 FORT LEWIS FOOD PREFERENCE SURVEY

by

Herbert L. Meiselman
Willard Van Horne
Barbara Hasenzahl
Thomas Wehrly

January 1972

UNITED STATES ARMY
NATICK LABORATORIES
Natick, Massachusetts 01760



Pioneering Research Laboratory

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TECHNICAL REPORT
TR 72-43 PR
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FOREWORD

Food preference data have traditionally been collected by military and civilian feeders to provide the customer with desired foods. The Department of Army has long pioneered in the development of food preference measurement techniques, originally through the Food and Container Institute in Chicago, and since 1963 at the US Army Natick Laboratories in Natick, Massachusetts.

The results of this survey represent the most recent efforts toward development of food preference measurement techniques and of a body of food preference information which menu planners can use to make decisions. The data contained in this report should be of interest of anyone involved in feeding. The more general issues of food preference measures, preference data analysis, and decision-making based on preference data hopefully will stimulate interest in these areas.

This technical report is one of several dealing with studies of the feeding system at Fort Lewis, Washington, evaluations of that system, recommendations for change at Fort Lewis, and the results of those changes. This work was carried on as part of Task 03 under Project Number 1J5662713AJ45, Systems Studies in Military Feeding, and Task 06 under Project Number 1J662713A034, Military Food Service and Subsistence Technology.

Each military service, Army, Navy, Air Force, and Marine Corps has its representative at the Natick Laboratories. Inquiries concerning this report, or other matters in the Department of Defense Food RDT&E Program, should be directed to the appropriate Service Representative, for example:

Navy Representative
DOD Food Program
US Army Natick Laboratories
Natick, Massachusetts 01760

ACKNOWLEDGMENTS

A project as vast and long term as a food preference survey cannot be accomplished without the help of many individuals and groups. The Operations Research/Sytems Analysis Office (Dr. Robert Byrne, Chief) of U. S. Army Natick Laboratories has coordinated the feeding system study at Fort Lewis, and has provided continuing support for our work. The personnel at Fort Lewis, Washington, especially the Services Division (Col. Julian Turner, Chief), greatly lessened the burdens of field testing. The staff of the Food Laboratory of Natick Laboratories made many suggestions on the food list, and the members of the Armed Forces Menu Service Committee (Col. James Ferguson, Chairman); provided valuable suggestions on survey layout and content. Many staff members of the Behavioral Sciences Division (Dr. Harry Jacobs, Chief) of the Natick Laboratories gave their greatest effort to this project especially, Miss Joan Beck, Mr. Robert Kluter, Mrs. Lucy Albertini, Mrs. Barbara Bell and Miss Day Waterman. Lastly, we wish to acknowledge the help of CPT Richard Johnson, Dr. Harold Kiess, Dr. Thomas Nichols, and CPT Bradley Swanson in administering the survey.

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ABSTRACT – 1971 FOOD PREFERENCE SURVEY

During April 1971 a Food Preference Survey was administered to a large sample of enlisted personnel at Fort Lewis, Washington. The questionnaire consisted of 416 food items chosen primarily from the Armed Forces 42 Day Master Menu. For each item, the hedonic value was correlated with its score for preferred frequency of serving. The food items were categorized in menu classes (e.g., main dishes, vegetables, desserts) and by meals (e.g., midday meats, breakfast beverages, evening desserts, etc.). A statistical estimate of underserving and overserving was obtained by comparison of the soldiers' preferred frequency of serving to the number of times it actually appeared in the 42-day Army Master Menu. Scales of preference frequency appear to be worthy of further investigation for use in menu planning.

THE UNIVERSITY OF CHICAGO

PHILIP H. KATZ

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1948-1949

1950

1951-1952

1953

1954-1955

1956-1957

INTRODUCTION

The 1971 Food Preference Survey represents the effort of the Food Acceptance Laboratory to develop new concepts of food preference measurement, preference data analysis, and preference data utility. The Food Acceptance Laboratory, part of the Quartermaster Food and Container Institute in Chicago until 1963 and now part of the Pioneering Research Laboratory at US Army Natick Laboratories, Natick, Massachusetts, has historically developed techniques for measurement of food acceptance and preference, and applied these techniques to real measurement problems. One mission on which great effort has been expended in the past is large scale food preference surveys, routinely conducted every few years to provide Armed Forces menu planners with up-to-date information on what the troops want to eat (see References).

Previous surveys, and the research on which they were based, have yielded helpful information for menu planners. The classic nine-point scale of hedonic measurement was validated as an important survey tool which provided more objective measures of food likes and dislikes. (Peryam and Pilgrim, 1957)

In addition to surveys using the nine-point scale of food acceptance and preference, the Quartermaster Corps sponsored investigations of other techniques in food preference measurement. Kennedy studied the preferences of 144 pre-army age California boys for 258 food items (Kennedy, 1951), and the preferences of 45 California college women for 520 foods (Kennedy, 1958). In both cases a five-point scale was used: very good, good, moderate, tolerated, disliked. Abbott, Townsend and French (1952) used a two-point scale, acceptable and disliked, plus "not tried".

Benson (1958, 1960) asked personnel at the Food and Container Institute to select the frequency with which they preferred each of twenty foods. He developed mathematical functions describing the acceptability at different serving frequencies. Despite these efforts, many problems in food preference measurement pertaining to menu planning have gone unresolved. The problem of repetition in the cyclic menu used in the Armed Forces has never been directly addressed. For example, if a person likes strawberry shortcake more than hamburger, (using the classic nine-point scale), it is not necessarily true that he would accept strawberry shortcake more often as a meal component. Some foods of relatively low preference (salad dressing, etc.) could be acceptable every day, whereas more highly preferred foods (roast beef, apple pie) might have to be offered less frequently

to maintain their high preference standing. It is conceivable that some relatively high preference foods are served too often, thus lowering their appeal in the cyclic menu, while relatively low preference foods could be served too rarely. The outcome would be to reduce the desirable feature of menu variety. A new preference survey has been developed to address these and other questions of cyclic menu planning.

The 1971 Survey was also directed at techniques for specifying problem foods in a food system. Currently, the approach has been limited mainly to ordinal and interval scales. These scales vary from the traditional nine-point scale cited above to a two-point scale. It was hoped that the new scales being investigated in the present survey could help define problem foods with greater precision. Naturally, one practical benefit of the survey was to assess the food preferences of the test population used, troops at Fort Lewis, Washington.

PROCEDURE: QUESTIONNAIRE DESIGN AND FORMAT

The 1971 Food Preference Survey consisted of 416 randomly listed food items chosen primarily from the Armed Forces 42 Day Menu. Also included were food items likely to be added in the near future. The entire list of items appears in Appendix A. Each respondent was asked to rate all food items on two different food preference scales, the preference frequency scale (Part I) and the traditional nine-point hedonic scale (Part II).

The nine-point hedonic scale has been used in several large scale food preference surveys in the past and provides reliable data for purposes of comparative analysis. Briefly it requires that each respondent indicate his degree of like or dislike for each food item. As noted, the scale range is from 1 (dislike extremely) to 9 (like extremely).

The preference frequency scale on the other hand required that each person indicate *how often* he would like to eat a particular food (in terms of desired servings/week and the number of weeks per month) for each meal. The survey format also permitted him to indicate that he never wanted a particular food item or that he had never heard of it.

The reader will note that the frequency scale does not provide for equal representation of all days of the month. This can be seen by multiplying days of the week by weeks of the month. There is a disproportionate representation of low frequencies. Also, some

frequencies, e.g., 23 times per month, never appear at all. The reason for choosing such a frequency scale is that it was felt that it provided for easy expression of preference frequency on a weekly cycle basis. Future reports will specifically address the effect of frequency scale design on preference ratings. The survey was printed on mark-sense sheets for automated data reduction. The average respondent required ninety minutes to complete the questionnaire.

Selection of Respondents and Administration of Questionnaire:

The respondents interviewed at Fort Lewis were selected in accordance with a pre-determined sampling plan. All dining hall units at the Fort Lewis installation were first stratified by: 1) average monthly attendance rates; and 2) dining hall type. Nine dining halls were then selected from the TDA (Table of Distribution and Allowances) and TOE (Table of Organization and Equipment) halls, and individual respondents randomly selected from each dining hall.

Seventy respondents were randomly selected from the Signature Headcount Sheets, DA Form 3351, for each dining facility. A list of these names was then made available to company commanders of selected dining halls, with the instruction that fifty of the seventy soldiers enumerated be sent to a specified interview session. Only fifty were requested in order to facilitate administration of the questionnaire and to minimize sampling difficulties attributable to troop movement, transfers, etc. In actuality, however, it was generally impossible to obtain even fifty of the seventy respondents selected in each facility. Table 2-1 below presents the dining hall units selected, the identification letter assigned to them, the number of respondents interviewed in each, and the percentage utilization of the facility during February, 1971, as determined from the signature headcount sheets.

Due to unexpected difficulties in interviewing those respondents enumerated for this study, two significant departures from an unweighted probability sample design were necessary in order to fill sample quotas:

1) BCT (Basic Combat Training) units were selected by personnel of the Support Services Division at Fort Lewis. These particular units were selected strictly on the basis of availability. The units selected and the number of BCT's interviewed are presented below:

Table 2-1: TDA and TOE Sample, Fort Lewis

Dining Hall Units	No. Interviewed	No. Discarded	Total	% Util.
A ¹ Co A, USATCI Wac Co	34	0	34	27%
B HHC, USATCI	32	1	31	43%
C 3rd Cav I & K Troops	51	0	51	66%
D HHD 62 Med Gp 551st Med Co 423d Med Co	36	2	34	48%
E HQ, 339th Engr.	26	0	26	48%
F 2d Bn 19th Arty	47	2	45	54%
G 143 SDS Co 63d Ord Co	30	1	29	57%
H 513 Maint Co 171st Ord	53	3	50	56%
I 542d Maint Co 70th Support Bn 151st	43	0	43	66%

¹ This unit was composed of 19 males and 15 females.

Identification:	Units:	No. Interviewed:	No. Utilized:
BCT	B-2-2	50	49
	C-1-2	49	49

2) An additional 248 men were also made available through the Fort Lewis Personnel Center. These respondents were not Fort Lewis based personnel but transient military personnel previously based in the Continental United States, Europe, or South East Asia. These particular respondents filled out *only* the Food Preference Survey, *not* the Consumer Attitude Survey or the Proposed Changes Questionnaire (both of which were administered at Fort Lewis during the same period of testing and are not discussed in this report).

Evaluation of Sampling Procedure:

Data generated by the sampling procedure outlined above, while useful in testing the applicability of certain techniques and measuring instruments not previously utilized in food acceptance survey research, are subject to a number of systematic biases. As noted for example, the unweighted probability sample is based upon available Signature Headcount Sheets. These sheets can be characterized by two general deficiencies, which may contribute to certain systematic biases: 1) verification problems; and 2) the under-representation of respondents with negative attitudes toward the facilities in question. The first deficiency noted above is not a serious one since the assumption can reasonably be made that the elimination of respondents whose handwriting could not be verified on the headcount sheets, probably represents no systematic biasing of the sample. The second deficiency however is considerably more serious: the under-representation of infrequent users of the dining facilities may constitute a definite over-representation of those respondents "favorably inclined" toward the dining facilities, and an under-representation of those whose opinion is particularly crucial if utilization of dining halls is to be improved.

The estimation of a rigorous error term for this sub-sample is further complicated by the fact that those men ultimately drawn from the randomly determined respondent pools were selected by their company commander or his representative. And respondent

selection by company commanders was based primarily on the accessibility of these men. If one assumes that respondent accessibility for interviewing purposes was in some way related to consumer preferences, then the elimination by company commanders of inaccessible respondents may also have contributed to a systematic biasing of results.

Lastly, as noted earlier, two sub-samples used in this analysis are samples of convenience and not probability samples. Consequently, no rigorous error term for these sub-samples can be computed. In spite of these departures from a purely random sampling procedure, the selection of respondents incorporated in this sample are considered broadly representative of Army personnel, and the data has been interpreted accordingly.

Administration of Questionnaire:

The questionnaire upon which this report is based was called the "Food Preference Survey". In a single session, each soldier filled out this questionnaire in addition to two other questionnaires not described in this report (the "Dining Facilities Questionnaire" and the "Proposed Changes Questionnaire"). The two hundred and forty-eight soldiers in transit were required to fill out *only* the "Food Preference Survey". Sessions were conducted in groups of approximately twenty to fifty people, starting at either 0730 to 1230 and lasting about 3-1/2 hours. The "Food Preference Survey" required approximately ninety minutes to complete. Normally there were six test supervisors in two groups of three responsible for the administration of the instrument. Supervisors checked each questionnaire upon completion to assure that it had been filled out properly.

Of the 689 questionnaire forms administered, forth-two forms were discarded because of incompleteness (6.1%); thirty-seven forms were removed by inspection (5.4%), and another thirty-seven were eliminated on the basis of three separate reliability checks (5.4%): Reliability checks were based upon: a) average individual discrepancies in the hedonic ratings of five duplicate food items inserted in the questionnaire; b) average individual discrepancies in the preference frequency ratings of these same duplicate items; and c) average individual correlation coefficients between hedonic preference scores and frequency scale scores within specified sub-classes of foods. The distribution of individual outcomes were plotted for each test, and individuals falling below the tenth centile were identified for each test. Those individuals falling in this critical region on two of the three tests were eliminated.

Of the 573 troops comprising the final sample, 301 took the Consumer Attitude Survey alluded to earlier. While not discussed in this report, the Consumer Attitude Survey was designed to determine which factors best predict and explain attendance at the dining facilities. The extensive demographic and attitudinal data collected in this second survey, when combined with the Food Preference Survey Data, will permit a detailed analysis of the relationship between frequency of dining hall attendance, frequency of food item choice, and personal "background" factors (such as age, level of education, attitude toward military service, etc.). The reader is therefore referenced to the Consumer Attitude Survey for a complete description of these sub-sample findings.

RESULTS

Most and Least Preferred Foods:

Table 3-1 lists (a) the twenty-five highest hedonically preferred foods and b) the twenty-five least hedonically preferred foods. Noteworthy is the fact that the twenty-five most preferred foods are the traditionally popular ones, and represent food items from virtually every food category (meats, vegetables, beverages, desserts, etc.). One measure of the rank-order reproducibility of these high preference food choices across various surveys was estimated utilizing both the 1960 "Food Preferences Of Men in the Armed Forces" Survey (Peryam, *et al.*), and the 1963 "Analysis of US Army Food Preference Survey" (Technical Report 67-15 PR). Of the twenty-five foods most highly preferred by Fort Lewis men, however, only fourteen were duplicated in *both* of the aforementioned surveys. Kendall's coefficient of concordance (W), a statistic which indicates the degree of agreement among the three sets of rank-ordered food items, was computed ($W = .726$), indicated a moderate level of agreement in the rank order findings among the three surveys. Because of the truncated range of food items actually analyzed (i.e., 14) considerable caution should be exerted in interpreting this statistic (even though 75% of the maximum possible rank variance is explained).

The twenty-five preferred foods, on the other hand, include a disproportionate number of food items from vegetable, salad, soup, and pie sub-classes. Use of the Kolmogorov-Smirnov one sample test reveals furthermore that the distribution of these observed outcomes do differ significantly from an expected distribution of food choice outcomes based solely on chance. Hence we can definitely conclude that there is a significant relationship between food class and undesirability or low consumer acceptance (see Table 3-2 below):

Table 3-1: Foods Best & Least Liked on Hedonic Scale

a. 25 Most Preferred Foods		b. 25 Least Preferred Foods	
Food Name	Hedonic Preference	Food Name	Hedonic Preference
Milk	8.03	Pickled Beet/Onion Salad	3.01
Orange Juice	7.65	Parsnips	3.10
Grilled Steak	7.61	Zucchini Squash	3.21
Hot Rolls & Buns	7.46	Iced Coffee	3.31
Fried Chicken	7.43	Eggplant	3.43
Chocolate Milk	7.42	Rutabagas Turnip	3.48
Oranges	7.33	Carrot, Raisin & Celery Salad	3.56
Ice Cream	7.32	Raisin Pie	3.67
Corn-on-the-Cob	7.29	Manhattan Clam Chowder	3.73
French Fried Potatoes	7.28	Butterscotch Sauce	3.77
∞ Eggs to Order	7.27	Cucumber/Onion Salad	3.80
Chicken	7.26	Canned Figs	3.86
Bacon, Lettuce, & Tomato Sandwich	7.23	Succotash	3.88
Fresh Apples	7.20	Cabbage & Sweet Peppers	3.88
White Bread	7.18	Yellow Squash	3.88
Oranges	7.16	Cheese Soup	3.88
Milk Shake	7.15	Stuffed Celery/Peanut Butter	3.88
Toast	7.14	Cooked Onions	3.88
Cola	7.14	Mustard Greens	3.89
Strawberry Shortcake	7.14	Turnip Greens	3.89
Bacon	7.12	Pepper Pot Soup	3.89
Fried Eggs	7.05	Onion Soup	3.89
Banana Split	7.05	Kidney Bean Salad	3.91
Ice Cream Sundae	7.05	Mincemeat Pie	3.93
Fresh Peaches	7.04	Sukiyaki	3.94

Table 3-2: Kolomogorov-Smirnov Test for Association Between Food Class and Low Food Acceptability

	Food Class											
	Acces- sory	Beve- age	Bread	Cereal	Dessert	Fruits	Main Meal	Potato	Salad	Soup	Vege- table	
Observed Frequency of 25 least liked foods	2	1	0	5	2	1	1	0	5	4	9	= 25
Cum Freq.	2	2	3	3	5	6	7	7	12	16	25	
Expected Frequency	2.35	2.11	1.06	0.23	4.93	1.47	6.51	1.29	1.58	1.35	2.11	
Cum Freq.	2.35	4.46	5.52	5.75	10.68	12.15	18.66	19.95	21.53	22.88	25	

Obtained $D = 12.95/25 = .52$, significant at .01

Table D required at:

.05 = .27

.01 = .32

What this test does not reveal however are *which* sub-classes of foods are contributing most to the significant association between food class and low consumer acceptance. The χ^2 test, while inappropriate in cases of this type with such small expected frequencies, nevertheless does sensitize us to the specific sub-classes which depart most from our expectations. In Table 3-3 which follows, Chi-square values have been computed for each sub-class:

Table 3-3: Chi-Square Values in Test of Association Between
Food Class and Low Food Acceptability:

	Food Class										
	Access- sory	Beve- age	Bread	Cereal	Dessert	Fruits	Main Meal	Potato	Salad	Soup	Vege- table
Chi-Square Values for Table 2 data	.05	.59	1.06	.23	1.74	.15	4.67	1.29	7.36	5.20	22.45
											T = 44.80

Immediately noteworthy is the fact that *only four* of the eleven sub-classes of foods listed above are strong contributors to the highly significant association between food class and low-food acceptability noted earlier: Main meal items, Potatoes (and Starches), Salads, Soups, and Vegetables all vary considerably from our expectations based on chance. Main meal items vary from our expectations, however, because they are strongly *under-represented*; on the basis of chance alone, in short, one would have expected a greater representation of main meal entree items among these twenty-five least desired foods. Potatoes, Salads, Soups, and Vegetables on the other hand are all greatly *over-represented* among these least desired foods — indicating that particular attention should be addressed to these food sub-classes.

Interestingly, in both cases the twenty-five high and low preference foods are included within a scale range of approximately one point. All remaining foods (roughly 88% of the 416 foods surveyed) are represented in the intermediate scale point range (4.0-7.0 on the hedonic scale). With one exception, no foods occupy the most extreme possible positions on this scale (i.e., 1.0, 2.0, 8.0). Only milk, with a hedonic preference rating of 8.03, occupied an "extreme" position on the hedonic scale rating.

Table 3-4 presents the twenty-five foods most frequently and least frequently selected per month for all meals (breakfast, luncheon, and supper). Theoretically, of course, if an individual selected a particular food item every meal of the day, every day of the week, and four weeks per month, a total frequency selection of eighty-four servings per month would be possible. As noted in the Table, however, only milk approaches this

Table 3-4: Frequency of Food Item Selection

a. 25 Most Frequently Selected		b. 25 Least Frequently Selected		c. 25 Most Often Never Preferred	
Food Name	Frequency (Servings/month)	Food Name	Frequency (Servings/month)	Food Name	Number of Never Responses
Milk	67.54	Parsnips	1.27	Cabbage & Sweet Pepper Salad	418
White Bread	46.71	Cheese Soup	1.44	Figs (Canned)	388
Chocolate Milk	39.14	Sauerbraten	1.56	Cucumber & Onion Salad	386
Fresh Coffee	35.97	Knickerbocker Soup	1.61	Onion Soup	383
Whole Wheat Bread	35.97	Frijole Salad	1.68	Kidney Bean Salad	379
Beer	31.04	Raisin Stuffing	1.69	Oyster Stuffing	378
Hot Rolls & Buns	29.60	Mulligatawny Soup	1.71	Cheese Soup	377
Cola	26.99	Cabbage/Sweet Pepper Salad	1.74	Parsnips	374
Tea	26.78	Rutabagas Turnip	1.79	Eggplant	366
Orange Juice, Instant	26.19	Creole Soup	1.88	Pickled Beet/Onion Salad	361
Orange Juice	25.78	Canned Figs	1.89	Raisin Pie	361
⇒ Toast	24.82	Pepper Pot Soup	2.01	Turnip Greens	357
Lettuce & Tomato Salad	23.78	Corn Chowder	2.04	Cucumber Onion/Sw. Pepper Salad	354
Iced Tea	23.13	Succotash	2.10	Pickled Green Beans	353
Tossed Green Salad	22.32	Kidney Bean Salad	2.11	Raisin Stuffing	353
Eggs to Order	22.17	Pickled Green Beans	2.12	Carrot, Raisin & Celery Salad	348
Bacon	20.94	Sukiyaki	2.12	Sardines	348
Hot Cross Buns	20.30	Onion Soup	2.14	Stuffed Celery/Peanut Butter	348
Fresh Apples	19.78	Raisin Pie	2.18	Mincemeat Pie	346
Fresh Oranges	19.75	Zucchini Squash	2.26	Beets	345
Milk Shake	19.60	Mustard Greens	2.30	Sour Cream Salad Dressing	345
Ice Cream	19.36	Rice Pilaff	2.40	Mustard Greens	343
Fresh Salad Dressing	19.19	Oyster Stuffing	2.42	Prunes (Canned)	343
Thousand Island Salad Dressing	19.18	Fish Chowder	2.46	Brussel Sprouts	340
Biscuits	18.66	Eggplant	2.46	Instant Coffee	339
				Stewed Tomatoes	339

maximum limit with a desired number of servings per month of 67.5. The majority of food items composing this list of most frequently desired foods are beverages, breads and biscuits, fresh fruits, green salads, and salad dressings. With the exception of bacon (a main meal entree item only at breakfast) no other main dishes were on this list. The preponderance of accompaniment items and the lack of main dishes reflected the fact that accompaniments can be more frequently served than the main dishes, a finding which concurs with current practices.

Interestingly, only fourteen of the twenty-five most frequently selected foods (Table 3-4) were also among the most hedonically preferred. (Table 3-1). As can also be observed in the Table 3-5 below, eleven of the most hedonically preferred foods were not among those most frequently selected:

Table 3-5: Cross Tabulations of 25 Most Hedonically Preferred Foods And the 25 Most Frequently Selected Foods

	Most Hedonically Preferred	Not Most Preferred
Most Frequently Selected	1. Milk	1. Fresh Coffee
	2. Regular Orange Juice	2. Beer
	3. Toast	3. Tea
	4. Cola	4. Instant Orange Juice
	5. Oranges	5. Lettuce & Tomato Salad
	6. Chocolate Milk	6. Iced Tea
	7. Strawberry Shortcake	7. Tossed Green Salad
	8. Eggs to Order	8. Thousand Island Dressing
	9. Hot Rolls and Buns	9. French Salad Dressing
	10. Fresh Apples	10. Biscuits
	11. Bacon	11. Hot Cross Buns
	12. White Bread	
	13. Milk Shake	
	14. Ice Cream	
Not Most Frequently Selected	1. Grilled Steak	
	2. Fried Chicken	
	3. Corn-on-the-Cob	
	4. French Fries	
	5. Chicken	
	6. Bacon, Lettuce & Tomato Sandwich	
	7. Fried Eggs	
	8. Banana Split	
	9. Oranges	
	10. Fresh Peaches	
	11. Ice Cream Sundae	

What these findings suggest is that the correlation between the hedonic preference rating and the frequency of food item selection is not perfect. Indeed the actual correlation was only moderate ($r = 0.39$) and data varied considerably from one sub-class of foods to another. Had the correlation been perfect of course, all of the above enumerated foods would have fallen into the top left cell of the table. (For a complete enumeration of sub-class correlations between hedonic and frequency scales, see Appendix D).

Summarizing briefly, certain rich or "heavy" food items like fried chicken, banana splits, or ice cream sundaes, may be very highly liked but not so frequently selected. Conversely of course food items like tea, coffee, or biscuits may be only moderately liked but very frequently requested.

These same types of findings are obtained for those food items which are least desired and least frequently selected. In Table 3-6 below, for example,

Table 3-6: Cross Tabulation of 25 Least Hedonically Preferred Foods and the 25 Least Frequently Selected Foods:

	Least Hedonically Preferred	Not Least Preferred
Least Frequently Selected:	1. Parsnips	1. Sauerbraten
	2. Raisin Pie	2. Rice Pilaff
	3. Zucchini	3. Fish Chowder
	4. Onion Soup	4. Corn Chowder
	5. Sukiyaki	5. Frijole Salad
	6. Pepper Pot Soup	6. Creole Soup
	7. Cheese Soup	7. Oyster Stuffing
	8. Mustard Greens	8. Oyster Stuffing
	9. Cabbage & Sweet Pepper Salad	9. Knickerbocker Soup
	10. Kidney Bean Salad	10. Mulligatawney Soup
	11. Rutabagas Turnip	11. Raisin Stuffing
	12. Canned Figs	
	13. Succotash	
	14. Eggplant	

Table 3-6: Cross Tabulation of 25 Least Hedonically Preferred Foods and the 25 Least Frequently Selected Foods: (cont'd)

Least Hedonically Preferred

Not Least Frequently Selected:	1. Pickled Beet/Onion Salad
	2. Carrot, Raisin, Celery Salad
	3. Manhattan Clam Chowder
	4. Stuffed Celery/Peanut Butter
	5. Butterscotch Sauce
	6. Cooked Onions
	7. Turnip Greens
	8. Mincemeat Pie
	9. Yellow Squash
	10. Iced Coffee
	11. Cucumber & Onion Salad

only fourteen of the least hedonically preferred foods are also the least frequently selected. Conversely, eleven of the twenty-five least frequently selected foods are *not* the least hedonically desired. Many of the soups, for example, are the least frequently selected food items (Corn Chowder, Fish Chowder, etc.) in spite of the fact that these food items are not considered the most undesirable from a hedonic viewpoint. These data confirm the previous observation that desire for specific food items does not necessarily imply a perfect correspondence with the actual frequency with which that food item may be selected.

None of these foods are desired more than three times per month for all meals; again, soups, vegetables, combination and bean salads, stuffings, and certain "ethnic" foods appear to be highly represented among these infrequently selected foods. Two "logical" but erroneous inferences which might be made on the basis of data presented up to this point are the following: 1) foods infrequently desired by military personnel should be deleted from the Army Master Menu; and 2) conversely, foods frequently desired by Army men can be safely increased in the current cyclical menu. Both conclusions would be unwarranted since at least two other crucial variables have not yet been considered: 1) the *actual* frequency with which these foods are currently being served according to the Armed Forces Master Menu; and 2) the degree of variability in opinion.

The operating assumption made with infrequently desired foods is that a low average frequency preference rating of a given food item constitutes a sufficient basis for the deletion of that item from the Master Menu. Clearly, however, it is important for menu planning purposes to know whether each food item is *preferred with greater frequency than it is being offered* (in which case, additional offerings and not deletions should be considered); or whether on the other hand, a food item is actually being served more often than it is preferred (in which case deletions might be considered). This specific issue is the subject of detailed discussion on page 29.

The operating assumption made with frequently desired foods is that the use of the arithmetic average in expressing the frequency of preference of a given food item, is a sufficiently clear and unambiguous method of measurement. The arithmetic mean as a measure of central tendency, however, may obscure the fact that a given food item, while *on the average* desired quite infrequently, may in fact be very frequently desired by 10 or 15% of the respondents. Hence the elimination of a food item solely on the basis of its low average frequency rating may well discriminate against a small portion of the respondent population who in fact desire this food item with moderate or even great frequency. This type of problem is particularly critical in the case of certain ethnic or regionally preferred foods.

A closer analysis of Tables 3-4b and 3-4c (see Table 3-7 below) reveals for example that only twelve of the twenty-six foods appearing on the NEVER SELECTED list are also the LEAST FREQUENTLY SELECTED/MONTH. Fourteen foods on the NEVER SELECTED LIST on the other hand are NOT the least frequently selected foods on the average. What this phenomenon reflects is the fact that these fourteen food items, while NEVER desired by approximately sixty percent of the respondents, *are* desired with moderate frequency by the remainder-the minority of the respondents.

A brief perusal of the table below, a cross tabulation of Tables 3-4b and Table 3-4c, clarifies this point:

**Table 3-7: Cross Tabulation of Least Frequently Selected Foods
and The Never Selected Foods:**

	Least Frequently Selected	Not Least Frequently Selected
Never Selected:	1. Cabbage & Sweet Pepper Salad	1. Cucumber & Onion Salad
	2. Figs (Canned)	2. Pickled Beet & Onion Salad
	3. Onion Soup	3. Turnip Greens
	4. Kidney Bean Salad	4. Cucumber, Onion & Sweet Pepper Salad
	5. Oyster Stuffing	5. Carrot, Raisin & Celery Salad
	6. Cheese Soup	6. Sardines
	7. Parsnips	7. Beets
	8. Raisin Pie	8. Sour Cream Salad
	9. Pickled Green Beans	9. Canned Prunes
	10. Raisin Stuffing	10. Brussel Sprouts
	11. Mustard Greens	11. Mincemeat Pie
	12. Eggplant	12. Instant Coffee
Not Never Selected		13. Stuffed Celery/Peanut Butter
		14. Stewed Tomatoes
	1. Sauerbraten	
	2. Knickerbocker Soup	
	3. Mulligatawney Soup	
	4. Frijole Salad	
	5. Rutabagas Turnip	
	6. Creole Soup	
	7. Pepper Pot Soup	
	8. Succotash	
	9. Sukiyaki	
	10. Corn Chowder	
	11. Rice Pilaff	
	12. Zucchini Squash	
	13. Fish Chowder	

The fourteen foods appearing in the top right cell of Table 3-7 in spite of the fact that they do not appear on the list of the twenty-five least frequently selected foods, are nevertheless mentioned as foods which the majority of men would *never* eat. This apparent anomaly can only be explained by the fact that while more than sixty percent of the respondents would select these foods zero times/month, the remainder evidently preferred them with sufficient frequency to remove them in effect from the list of least desired foods (on the average). In short, we would hypothesize that the variance of opinion regarding the desired consumption of these fourteen foods is significantly higher than the variance of opinion characterizing the foods in the top left cell of the Table. And indeed, the standard deviations of the respective food groupings support this hypothesis (6.51 and 10.31 respectively). Summarizing briefly, it is apparent that even foods which are *never* selected by a majority of Army men have their advocates, and are not uniformly unpopular among the entire population, substantiating a finding from the 1967 Army Survey.

Relationship between the preference scales for foods classes and food items.

Table 3-8 provides a summary overview of both hedonic preference rating and frequency preference rating by food *sub-class*. The average hedonic sub-class ratings given to ice creams, milk, beverages, breakfast meats, breads and rolls, buns and doughnuts, eggs and meats were relatively high, while green and mixed vegetables, soups, vegetable and fruit salads, hot breakfast cereals, cheeses, stuffings, sauces, and condiments were relatively low. Average preference frequency ratings were given to milk products, hot beverages, fruit and vegetable juices, fruit drinks, breads and rolls, buns and doughnuts, ice creams, etc., breakfast meats, eggs, fruits, and potatoes were relatively high; soups, stuffings, fritters, casseroles, green vegetables and other vegetables on the other hand were relatively low. Based on this data, it seems clear that major acceptance problems are located in accessory, vegetable, soup, and salad classes.

**Table 3-8: Average Hedonic Rating And Average
Frequency of Selection: By Food Subclass**

		Average Hedonic	Average Frequency Selection
I.	Accessory Foods:		
	a. Cheese	4.83	7.85
	b. Appetizers	5.72	9.84
	c. Condiments	4.89	7.06
	d. Stuffings	4.88	3.03
	e. Salad Dressings	5.08	11.89
II.	Beverages:		
	a. Fruit & Vegetable Juice	5.97	14.36
	b. Hot Beverage	5.56	20.57
	c. Fruit Drinks	5.84	13.10
	d. Milk Products	6.86	33.40
	e. Carbonated Beverages	6.06	14.89
	f. Beverage Bases	5.30	8.81
III.	Breads:		
	a. Muffins	5.87	7.92
	b. Breads & Rolls	6.26	20.16
	c. Buns, Doughnuts, etc.	6.30	13.45
IV.	Cereals:		
	a. Breakfast Cereals	4.72	6.27
	b. Griddle Cakes	6.19	11.70
V.	Desserts:		
	a. Cookies	4.89	5.43
	b. Puddings	5.32	6.05
	c. Cakes	5.30	6.86
	d. Sauces	4.78	4.39
	e. Pies	5.64	6.19
	f. Ice Cream	6.88	14.76
	g. Other	5.61	7.43

**Table 3-8: Average Hedonic Rating and Average
Frequency of Selection: By Food Subclass**

		Average Hedonic	Average Frequency Selection
VI.	Fruits:		
	a. Fruits	6.06	10.60
VII.	Main Dishes:		
	a. Breakfast Meats	6.64	14.13
	b. Eggs	6.40	13.44
	c. Fish & Seafood	5.50	6.01
	d. Pasta	6.10	7.40
	e. Meats	6.25	8.53
	f. Short Order	6.20	7.66
	g. Casseroles, etc.	5.13	4.40
VIII.	Potatoes/Starches:		
	a. Potatoes	6.21	10.82
	b. Pasta (side-dish)	5.73	6.42
	c. Beans	5.34	6.41
	d. Rice	5.13	5.98
	e. Fritters	5.25	4.26
IX.	Salads:		
	a. Vegetable	4.84	7.65
	b. Fruit	4.98	7.10
X.	Soups:		
	a. Soups	4.60	3.90
XI.	Vegetables:		
	a. Green	4.75	5.73
	b. Yellow	5.72	9.49
	c. Other	4.44	5.98

Table 3-9 permits a direct comparison of the two scales of measurement for each sub-class of food across all meals. Sub-classes designated as either high or low on either of the scales constitute the highest and lowest 15% of all food sub-classes*. The moderate category then constitutes the middle 70% of the food sub-classes for both the preference frequency scale and the hedonic and preference frequency scores represent the lowest 15% of average food sub-class scores on both scales. The moderate hedonic-high frequency block (fruit and vegetable juices, etc.) on the other hand represents those food sub-classes whose average hedonic ratings were in the middle 70% range of all sub-class hedonic ratings, and whose average desired frequency (per month) scores were in the highest 15% range of all sub-class average frequency scores. Milk products, ice creams, breads and rolls, and breakfast meats were the most popular food sub-classes, their high-high acceptability ratings attesting to their ever-popular status. Meats, eggs, buns and doughnuts were rated high hedonically and moderate in terms of their desired frequency of serving, indicating relatively little problem with these staples. Fruit and vegetable juices, carbonated beverages, and hot beverages, while accorded only moderate hedonic ratings, were desired with high frequency — indicating these food sub-classes can be served regularly and still maintain moderately high food acceptability.

The upper left corner of the table contains the more unpopular food and sub-classes. Occupying the low-low block were soups and dessert sauces.

*The decision to utilize cutpoints based on centile rankings rather standard deviations reflects the non-normality of the frequency scale distribution; furthermore, to the extent that the distribution of hedonic scores or preference freq. scores *are* normally distributed, the use of 15% low and high cut-points, conforms closely to the cut-points which would have resulted from using ± 1 S.D.

Table 3-9: Relationship Between The Two Preference Scales For Food Subclasses

	LOW	HEDONIC MODERATE	HIGH
LOW	Soups Sauces	Stuffing Fritters Casseroles, Stews Cookies	
FREQUENCY	Green Vegetables "Other" Vegetables Breakfast Cereals Vegetable Salads	Fish & Seafood Rice Puddings Pies Pasta (side order) Beans Cakes Fruit Salads Pasta (main dish) "Other" Fruits Short Order, Sandwiches Condiments Muffins Cheese	Beverage Bases Yellow Vegetables Appetizers Fruits Potatoes Salad Dressing Griddle Cakes Fruit Drinks
HIGH		Fruit & Vegetable Juices Carbonated Beverages Hot Beverages	Breakfast Meats Ice Cream Breads & Rolls Milk Products

Rated low in desired frequency of serving but moderate in hedonic value were casseroles and stews, fritters, stuffings, cookies. Green vegetables, "other" (primarily non-yellow) vegetables, hot breakfast cereals, and vegetable salads were rated low hedonically although desired with a moderate frequency. This data suggests that all of these sub-classes constitute possible problem areas. The complete listing in Appendix A should be consulted, however, for a more precise analysis of the relative standing of individual food items within each of these sub-classes.

An item breakdown of the relationship between the two measurement scales by meal is given in Appendix B. Cut points for the determination of low, moderate, and high classifications on both the hedonic and preference scale were determined by using the same 15% cut-points discussed previously. A description of the item breakdown follows:

I. BREAKFAST

Main Dishes

Eggs to order rated high-high for breakfast, with the traditionally popular bacon, fried eggs, and scrambled eggs scoring high on frequency and moderate on hedonic value. The other breakfast entrees scored moderate-moderate, indicating that items like french toast and griddle cakes should not be offered daily by themselves if high acceptability is to be maintained. No breakfast entree scored low on either scale indicating no serious problems in this food class.

Beverages

Orange juice, chocolate milk and milk rated high-high, with instant orange juice and fresh coffee rating high frequency and moderate hedonic value. Low hedonic value items were cranberry juice (low-low), and instant coffee and freeze-dried coffee (moderate frequency). All other juices and beverages (hot tea and cocoa) scored moderate-moderate. Fort Lewis mess personnel confirmed that the low scoring items were unpopular.

Breads and Cereals

Toast and white bread both scored high-high, with hot rolls scoring high on hedonic scale and moderate on frequency and whole wheat bread scoring moderate on hedonic and high on frequency. In the low-low block was date nut bread, hominy grits, farina, cornbread, and hot whole wheat cereal scored low on one of the two scales. Most items were in the moderate-moderate block suggesting the same conclusion here as for most breakfast main dishes, i.e. do not serve too often.

Fruits

Oranges and apples rated high hedonic and moderate frequency. Plums, figs and prunes (all canned) rated low-low, canned apricots rated low-moderate, and all other fruits scored moderate-moderate. The low-low scorers should be more carefully evaluated to determine whether they should be retained. Fort Lewis mess personnel substantiated the poor acceptability of these canned fruits.

2. DINNER

Main Dish

The main dishes rating high on hedonic scale had a large number of short-order items; six sandwich items scored high-high, as did fried chicken, chicken, and grilled steak. Rating high hedonic and moderate frequency were fourteen heavier dishes (ham, roast beef, etc.) and grilled cheese sandwiches. Those items scoring low on at least one scale were liver, liverwurst, fried oysters, and sardines. A large number of main dishes occupy the moderate-moderate block. Main dishes have been grouped into a) Sea foods; b) Pasta; c) Meats; and d) Sandwiches and cold cut items.

Casseroles and Combination Dishes

Overall these dishes did not score well. Seven dishes scored low frequency with stuffed cabbage, sauerbraten, and sukiyaki scoring low hedonic, and sweet and sour pork, veal scallopini, and scalloped tuna and peas scoring moderate hedonic. A large number of dishes scored high on either scale. This finding is in line with the traditional dislike shown for these combination and ethnic dishes.

Beverages

The high-high scoring items validate the recent moves to update beverage choice in military feeding. Chocolate milk and milk still rated very high. Milk shakes are part of the new soft serve ice cream system, and Cola is usually included in carbonated beverage systems. Beer and lemonade also rated high-high. Scoring moderate in hedonic value and desired with high frequency were tea, and iced tea, fresh coffee, fruit punch, and several sodas (orange, cherry, lemon-lime, grape, gingerale). Hot cocoa scored high hedonic-moderate frequency. The beverage bases and various fruit-ades all scored moderate-moderate indicating the excessive use of them might be unwarranted. Low hedonic scores went to freeze dried coffee and iced coffee possibly indicating the effect of the label (instant, etc.). No beverage scored low-low.

Breads

Hot rolls and buns, and white bread scored high-high, with five products scoring high on one of the scales (french bread, biscuits, sweet rolls, whole wheat bread, hot cross buns). Date nut bread scored low frequency-moderate hedonic, and five products scored moderate on both scales.

Potatoes and Starches

Items scoring high-high were french fried potatoes, potato chips and mashed potatoes, the two former items substantiating the short-order concept for lunch. Also high in hedonic score but of moderate frequency were hashed brown potatoes, and spaghetti. Most other starches were moderate-moderate raters indicating that not too frequent use is called for. No starches rated low-low. Fort Lewis mess personnel indicated that in practice potato chips are rarely taken because pre-packaged portions are too small.

Vegetables

Corn is the most popular vegetable with corn-on-the-cob rating high-high, and cream style corn and whole kernel corn rating high frequency and moderate hedonic along with mixed vegetables and sliced tomatoes. Nine vegetables scored low-low, (mustard greens, brussel sprouts, beets, cauliflower, zucchini squash, eggplant, succotash, rutabagas turnip, parsnips). Four scored low hedonic with moderate frequency (wax beans, cooked onions, okra, turnip greens), and yellow squash scored moderate hedonic-low frequency. Clearly, attention to vegetable acceptability is warranted.

Salads

Salads present a picture similar to vegetables. Tossed greens scored high-high; lettuce and tomato, tossed vegetable, lettuce, and jellied fruit salads scored high frequency with moderate hedonic. Eight salads scored low-low and two scored low hedonic-moderate frequency. In almost every case the low-scoring salads are mixtures of several items (e.g. carrot, raisin and celery salad, cabbage and sweet pepper salad, etc.).

Fruits

Apples, pears and watermelon scored high-high; bananas, oranges, peaches, and tangerines scored high hedonic-moderate frequency. Canned figs, prunes, plums, and grapefruit scored low frequency and all others scored moderate-moderate.

Soups

Surprisingly, no soup scored high on either scale. Six soups scored low-low, four scored low hedonic and moderate frequency, and another four scored low frequency and moderate hedonic. Nine soups scored moderate-moderate. These low scores for soups need further elucidation.

Desserts

The traditionally popular items of strawberry shortcake, ice cream, ice cream sundae, banana split, soft serve ice cream and milk shake rated high-high with chocolate chip cookies and apple pie rating high on one scale. But nine items rated low on one scale, indicating that some items in the very long dessert list need attention.

Accessory Foods

Considering that these foods are usually used as condiments, fillings, dressings, or side dishes, the ratings were generally low with three low-low ratings, and seven rating low on one of the scales. The low frequency scorers included four stuffings (savory, sausage, raisin, oyster).

3. SUPPER MEAL

Since the evening meal choices are similar to those for midday in many cases, only differences from midday will be noted.

Main Dishes

Three heavier dishes have entered the high-high group (swiss steak, turkey and roast beef) and cheeseburger and several sandwiches have dropped out indicating the possible preference for a heavier evening meal. The moderate frequency-high hedonic block still contains many short-order items indicating that short-order is appropriate here also, but in lesser proportion than for dinner. The low and moderate scoring items are similar to dinner.

Casseroles and combination dishes: similar to dinner

Beverages: similar to dinner

Potatoes and Starches and Breads: similar to dinner except that potato chips have moved to moderate frequency.

Vegetables

The overall picture is similar to dinner with slight changes. Green beans was added to the moderate hedonic-high frequency list; and the low scoring items have switched slightly, some moving to the low-hedonic moderate frequency.

Salads

Some low-low salads slip into low hedonic-moderate frequency, but the overall situation for supper is similar to dinner indicating that similar salads are appropriate for both meals.

Fruits

Similar to dinner except that watermelon is alone in the high-high box, with apples and pears joining the larger group in moderate frequency-high hedonic.

Soups: similar to dinner

Desserts: similar to dinner

Accessory Foods: similar to dinner

INTERPRETATION AND USES OF FOOD PREFERENCE DATA:

The gathering of food preference data has been widespread within the military, other institutional feeding organizations, and the food industry. Commonly, problems occur not in the collection or generation of the data but in its interpretation and presentation in a form which is useful for menu planners in their decision-making. To illustrate the problem, consider that mashed potatoes have an average hedonic rating of 6.75 and that french fried potatoes have an average rating of 7.28. Even if one knows that the hedonic preference of the french fried potatoes is significantly higher statistically than the rating of mashed potatoes, the problem determining whether the consumer will actually choose the french fried still remains. More importantly, are the *current servings* per month of either mashed potatoes or french fried potatoes (according to the Armed Forces Master Menu) in line with the preferred frequency of serving? Or are these food items being underserved? Or overserved? These questions are addressed in detail on the following pages:

Low Food Preference: One of the most striking findings in the present survey was the large number of foods currently being served on the Armed Forces Master Menu or planned for future adoption which are unpopular. Some of these specific foods are traditional problem foods, including liver, certain vegetables, and casseroles, while others are relatively unfamiliar problem foods, such as soups and salads. While the data collected in the Food Preference Survey were not specifically designed to indicate why certain foods were unpopular, a more general discussion of those factors contributing to low food preference and acceptance is possible here.

Clearly, some foods are not acceptable even with the best raw product, preparation, and serving. In some instances, of course the relatively low food acceptability of a given item can be attributed almost solely to the low quality of the raw product; this has been especially true for meats, and even more specifically for corned beef (an observation consistently confirmed by mess personnel at Fort Lewis). Preparation, on the other hand, is a much more complex issue than raw product quality. Involved in food preparation is the recipe to be followed, the equipment to be used, and the degree of personnel experience. Recipes themselves represent perhaps the least problematic feature of the food preparation process. Their correct on-site execution however, does constitute a more serious problem. In numerous instances it has been observed that the recipes are not being followed — salads, casseroles, and certain combination dishes providing examples. In other cases, even with highly motivated and conscientious personnel, sufficient expertise may be lacking to adequately prepare those items requiring a gourmet level of preparation; cheese soup is an example. Clearly, however, the lack of expertise is frequently reflected in the inappropriate preparation of more mundane items. Cooked vegetables, for example, will always present a food acceptance problem if they are placed in steam pans and held one or more hours before serving. The problems of sufficient and properly trained mess personnel is familiar, and will not be dealt with here.

Aside from the preparatory problems which may contribute to the low acceptability of certain foods, it is important to know to what extent these low acceptance food items are *uniformly unpopular* a point which was discussed earlier in this report. Despite the low *average* food acceptance rating of sukiyaki or hominy grits, for example, is there a substantial segment of the total population whose rating is at variance with this average, or is the variance of opinion minimal, reflecting an almost unanimous low rating of this foods? Ethnically and regionally popular foods (sauerbraten, mustard greens, onion soup are other examples) while typically rated low *on the average* for the total population, are also typically moderately or even highly rated by 10 to 20% of the population. In cases where rating average is low but variance is high, deletion of such an item should probably *not* be considered. If the item in question happens to be ethnically or regionally popular, of course, the solution is simple: serve these dishes where there are large concentrations of the particular ethnic group or according to regional location. Care should be exercised to insure that ethnic and regional dishes are properly prepared so as to please the audience to which they are aimed. This will often require advice to the cooks on preparation of specialty items. If the food item in question on the other hand is of

low food acceptance rating and variance of opinion from this low average rating is minimal, serious consideration should be given to its deletion, and certainly, careful scrutiny of its preparation. This same rule of thumb is probably applicable, incidentally, even if this uniformly low rated food is preferred more than it is actually offered, a possibility which will be further discussed in the section which follows.

Serving Frequency: As noted earlier, the 1971 Food Preference Survey also provides information about the frequency with which troops would like to have served different food items. The central issue raised here is the following: How should the current Armed Forces Master Menu be altered to reflect this new information? This is a difficult problem even when data on actual choice behavior in an actual choice situation are available. Such is not the case in this study; hence, any estimates of possible menu modification must of necessity be based on the assumption that verbal behavior or expressed attitude toward food names is congruent with actual food choice behavior.

As noted previously, traditional approaches to modification of the menu have been based generally on two key assumptions: that the serving frequency of foods which were highly rated could be increased on the menu; and 2) that the serving frequency of foods which were poorly rated could be safely decreased. Such an approach to menu planning decisions, lacking appropriate attention to the *actual frequency* of food offerings on the Master Menu, has resulted in the *overserving* of certain highly popular food items and, conversely, the *underserving* of certain unpopular food items. In short, appropriate changes in serving frequency can be made only after comparing the preferred frequency of serving with the actual frequency of serving. In this way a cyclic menu can be adjusted to reflect menu patterns more acceptable to the consumer.

The actual current serving frequencies used as a base line in this report were drawn from the March 1971-42-day Armed Forces Master Menu. Six 42-day-cycle menus compose the Master Menu, and each is slightly different from the other. Consequently, certain food items, available in some of the other cyclic menus, but not in the March menu, do not appear for comparative purposes with this survey data. All preference frequency data was adjusted to the same 42-day cycle base, and cumulative *class* preference frequencies compared with Master Menu class offerings per 42-day cycle; from this comparison, both preference and actual frequency scores could be standardized (based on the same number within each class) — thus permitting item by item comparison. If, for example, the total frequency with which desserts are *desired* is 113.7 times/cycle but

the current total offering of desserts is actually 71, then standardization of individual preference frequencies in the dessert class would require their reduction by a factor of $71/114$ or 0.624. In this way frequencies of individually preferred items can be directly compared with actual serving frequencies in order to determine whether cherry pie, for example, is preferred more than it is being offered (underserving), or whether conversely it is being offered more than it is preferred (overserving). A complete listing of overserved and underserved items is presented in Appendix C.

Some selected illustrations of the cross tabulation between hedonic preference and appropriateness of serving frequency i.e. whether overserved or underserved can be discussed. This data pinpoints possible weakness of traditional approaches to menu planning. A perusal of the Dinner Main Dishes Table from Appendix C reveals that such highly hedonically preferred foods as chicken, ham, pizza, and bacon, lettuce and tomato sandwiches are already being *overserved*. Hence, any strategy of menu planning based solely on the assumption that high hedonically preferred foods can be safely increased in serving frequency would increase rather than eliminate the problem addressed.

The related problem of underserving foods rated *low* in hedonic preference is perhaps less serious. Dinner vegetable items such as waxed beans and cauliflower provide illustrations of this phenomenon. Both are low hedonically rated foods which, while being offered relatively infrequently, are still underserved foods which could be offered more frequently, thus affording greater menu variety. On the other hand beets and succotash, which are low hedonically rated items already being overserved, should be immediately reduced in frequency or possibly deleted. Deletion of an item should only be considered if its menu modification denoted a *very small frequency of serving cycle* (perhaps less than three times per 42-day cycle across all meals), and of course was a *low hedonically rated item*. For items such as these, the nutritional and menu variety benefits provided by them may not warrant their cost. As noted before, one exception to this rule of thumb is regionally and ethnically preferred foods.

Serving Proportions: A related research problem, not directly addressed by this current study but requiring greater attention in the future, is the problem of appropriate menu combinations, and the optimization of serving proportions for different menu combinations. As Peryam *et al* observed in their concluding remarks to the *Food Preferences of Men In The U.S. Armed Forces (1960)*, "It is quite likely that when several foods are combined, the combination takes on a unique preference and the individual

components partially lose their identity". Hence any attempts to predict appropriate serving proportions, lacking paired or multiple comparison data, will be subject to considerable error, particularly among competitive food classes. The use of free-choice menu selection questionnaires has been suggested as one method of more precisely determining the relationship between competitive food class combinations and hedonic preference. The utility of hedonic and frequency scale preference ratings for two and three item *combinations*, combined with similar information for *individual* food items is not sufficient however to accurately predict consumer behavior. Clearly, factors such as the *recency* with which individual and combination food items have been eaten, will affect the hedonic ratings assigned to these foods. Likewise, the actual frequency with which individual or combination food items are offered will affect the degree of preference for that food item. Future lines of investigation therefore will require continued attention to hedonic and preference frequency data for *both* individual and combination menu items; and more importantly, the hedonic preferences of individual and combination food items will have to be assessed under conditions of: 1) varied frequency of offering; and 2) varied recency of serving. Extension of this line of investigation, in addition to the cross-validation of the frequency scale utilized in this survey, will also contribute significantly to the prediction of food consumption and other aspects of food behavior.

REFERENCES

a. Previous Surveys

Polemis, Bernice W., and Jones, W. H. Food Preference Study Conducted at Fort Riley, Kansas, August 1949. Quartermaster Food and Container Institute for the Armed Forces. Interim Report No. 1 on Project 7-84-15-01, January 1950. (a)

Polemis, Bernice W. Summary of Food Preference Survey Conducted Among Field Force Personnel, February 1950. Quartermaster Food and Container Institute for the Armed Forces, Chicago, Illinois. Interim Report No. 2 on Project 7-84-15-01, April 1950 (b).

Wood, Kr. R. Summary of Food Preference Survey Conducted Among Army Personnel-Zone of Interior, February 1951. Quartermaster Food and Container Institute for the Armed Forces. Research Report, Project No. 7-84-15-007. (a)

Polemis, B. W. Summary and Analysis of Data Obtained for First National Survey of Food Preferences in the Armed Forces. Quartermaster Food and Container Institute for the Armed Forces, Chicago, Illinois. Interim Report No. 3 on Project 7-84-007, February, 1951. (b)

Food Preference Survey conducted in 1958. Quartermaster Food and Container Institute for the Armed Forces, Chicago, Illinois, Interim Report No. 10, July 1959.

Peryam, D. R., Polemis, B. W., Kamen, J. M., Eindhoven, J., and Pilgrim, F. J. Food Preferences of Men in the Armed Forces. Quartermaster Food and Container Institute for the Armed Forces, Chicago, Illinois, 1960.

Kamen, J. M., Peryam, D. B., Peryam, D. R., and Kroll, B. J. Analysis of U. S. Army Preference Survey (1963) Peryam and Kroll Research Corporation, Chicago, Illinois. O. C. Technical Reports 67-15-PR, May 1967.

b. Articles

Abbott, O. D., Townsend, R. O. and French, R. B. A Survey of Food Preferences of Florida men. University of Florida, Agricultural Experiment Stations, Bulletin 500, 1952, 26pp.

Benson, P. H. Relation of Food Frequency of Serving. Final Contractors Report, Contract No. DA19-129-QM-972. 1958.

Benson, P. H. A Psychometric Approach to Predicting Consumer Preference. Personnel Psychology, 1960, 13, 71.

REFERENCES (cont'd)

b. Articles

Kennedy, B. M. Food Preferences of Pre-Army Age California Boys. Food Technology, 1952, 6, 93.

Kennedy, B. M. Food Preferences of College Women. Journal of the American Dietetic Association, 1958, 34, 501.

Peryam, D. R. and Pilgrim, F. J. Hedonic Scale Method of Measuring Food Preference. Food Technology, 1957, 9, 14.

APPENDIX A

LISTING OF FOOD ITEMS BY FOOD CLASS WITH AVERAGE HEDONIC AND FREQUENCY SCORES AND RANKS

This appendix is a tabulation of the primary Results of the Food Preference Survey. Food items are listed by subclass. The survey number indicates the order in which the item was listed on the survey. Following the item name are the mean hedonic rating on a nine point scale and the rank of the hedonic rating of the food out of 416 foods. The mean frequency preference rating and the rank of the rating for all meals, breakfast, midday, and evening respectively are given. The frequency is expressed in days per twenty-eight day month.

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean Freq/Mo		Breakfast		Midday		Evening		
					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
CHEESE													
	1	219	Cottage Cheese	5.01	280	8.83	145	0.50	156	4.95	87	3.38	129
	2	335	American Cheese	6.07	113	8.55	149	0.48	163	4.88	94	3.20	138
	3	381	Swiss Cheese	5.47	216	6.16	231	0.46	171	3.51	176	2.19	230
APPETIZERS													
	1	145	Shrimp Cocktail	5.67	167	7.34	184	0.24	254	3.30	194	3.80	106
	2	218	Orange & Pineapple Juice	5.94	131	13.56	53	9.42	23	2.42	263	1.72	286
	3	253	Tomato Juice	5.73	156	11.08	99	8.49	27	1.44	364	1.15	356
	4	260	Fruit Cup	5.53	197	7.09	191	0.54	149	3.54	172	3.01	149
CONDIMENTS													
	1	15	Mixed Sweet Pickles	4.43	350	9.07	137	0.20	302	4.93	89	3.94	95
	2	62	Cranberry Sauce	5.25	249	6.41	220	0.55	147	2.78	236	3.09	145
	3	127	Chopped Onions	4.17	376	5.20	277	0.09	378	3.02	218	2.10	240
	4	140	Sweet Pickles	4.86	294	6.86	199	0.22	282	3.85	152	2.79	167
	5	144	Green Olives	4.52	340	7.90	165	0.10	366	4.36	118	3.44	120
	6	201	Dill Pickles	5.53	196	10.52	106	0.19	308	5.86	62	4.48	69
	7	210	Sweet Pickle Relish	4.67	327	5.62	256	0.21	289	3.55	170	1.86	268
	8	279	Ripe Black Olives	4.44	347	7.82	166	0.09	370	4.34	120	3.39	127
	9	363	Stuffed Celery w/cheese	4.82	302	5.86	245	0.20	298	3.02	219	2.65	178
	10	397	Stuffed Celery w/pnutbu	3.89	400	3.78	343	0.40	183	1.92	315	1.46	318
	11	66	Carrot Sticks	5.49	210	13.27	56	0.28	229	6.92	34	6.08	35
	12	206	Celery Sticks	5.12	268	11.18	97	0.13	345	6.40	46	4.64	62
	13	76	Applesauce	6.05	117	11.79	84	3.27	61	4.53	109	3.99	92
	14	317	Mixed Nuts	5.66	170	5.18	278	0.23	271	2.52	254	2.44	198
	15	327	Pickled Green Beans	4.31	363	2.12	401	0.07	384	1.25	378	0.80	390

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean Freq/Mo		Breakfast		Midday		Evening		
					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
STUFFING													
	1	337	Corn Bread Stuffing	5.22	255	4.00	331	0.30	223	1.93	314	1.77	277
	2	342	Apple Stuffing	5.51	203	4.06	327	0.56	141	2.09	298	1.41	325
	3	344	Giblet Stuffing	4.93	289	3.48	356	0.16	324	1.87	325	1.45	319
	4	393	Raisin Stuffing	4.35	357	1.69	411	0.18	312	0.97	396	0.54	404
	5	400	Savory Bread Stuffing	4.74	320	2.83	383	0.06	399	1.67	344	1.10	357
	6	408	Sausage Stuffing	5.22	254	2.60	389	0.64	126	1.07	389	0.89	380
	7	410	Oyster Stuffing	4.15	377	2.42	394	0.09	371	1.32	374	1.00	369
SALAD DRESSING													
	1	349	Thousand Island	6.11	109	19.18	24	0.24	264	9.80	15	9.15	14
	2	358	French	6.12	106	19.19	23	0.19	304	9.74	16	9.26	13
	3	368	Vinegar & Oil	4.70	324	11.50	91	0.05	401	6.10	50	5.34	48
	4	379	Russian	5.16	263	9.89	116	0.15	332	4.94	88	4.80	59
	5	385	Sour Cream	4.34	361	5.10	282	0.10	369	2.69	242	2.32	217
	6	391	Blue Cheese	4.83	300	9.69	122	0.19	303	4.95	86	4.45	65
	7	402	Mayonnaise	4.81	304	9.23	132	0.15	335	5.21	78	3.87	100
	8	416	Creamy French	5.40	232	12.89	64	0.25	252	6.89	35	5.75	42
	9	236	Italian	5.45	220	12.99	60	0.20	301	6.64	41	6.15	33
	10	19	Cesar	4.47	345	12.14	77	0.31	217	5.89	60	5.94	39
	11	412	Garlic French	4.43	351	7.54	180	0.25	249	3.68	163	3.61	113
FRUIT AND VEGETABLE JUICES													
	1	1	Orange Juice Instant	6.25	89	26.19	10	18.20	6	4.55	107	3.44	122
	2	2	Grape Juice	6.13	105	15.56	42	8.89	25	4.18	127	2.48	196
	3	106	Grapefruit & Pineapple	5.57	190	12.11	78	8.99	24	1.67	346	1.46	317
	4	136	Pineapple Juice	5.69	162	11.63	88	8.42	28	1.76	335	1.45	320
	5	203	Orange Juice	7.65	2	25.78	11	20.06	4	3.39	185	2.34	213
	6	253	Tomato Juice	5.73	156	11.08	99	8.49	27	1.44	364	1.15	356

Food Class	Survey Number	Food Item	Mean		Mean		Breakfast		Midday		Evening		
			Hedonic	Rank	Freq/Mo Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
FRUIT AND VEGETABLE JUICES (Cont'd)													
	7	278	Grapefruit Juice	5.78	148	10.21	112	7.99	31	1.35	368	0.87	381
	8	292	Grapefruit & Orange	6.10	110	12.21	75	9.49	21	1.62	354	1.10	359
	9	218	Orange & Pineapple	5.94	131	13.56	53	9.42	23	2.41	263	1.72	286
	10	276	Cranberry Juice	4.79	311	4.59	300	2.14	74	1.38	367	1.07	365
HOT BEVERAGES													
	1	57	Tea	6.05	118	26.78	9	6.08	42	10.77	11	9.93	12
	2	167	Fresh Coffee	6.38	76	35.97	4	15.32	8	10.22	14	10.44	10
	3	336	Hot Cocoa	6.72	54	15.64	40	11.00	16	2.43	262	2.22	226
	4	243	Instant Coffee	4.56	335	10.79	103	5.40	44	2.69	241	2.70	172
	5	133	Freeze-dried	4.10	381	12.51	69	6.53	40	3.04	216	2.94	154
ICED COFFEE													
	1	411	Iced Coffee	3.31	413	4.11	325	0.84	114	1.93	313	1.34	331
ICED TEA													
	1	164	Iced Tea	6.52	66	23.13	14	1.54	91	11.59	9	10.01	11
FRUIT DRINKS													
	1	67	Fruit Punch	6.11	108	17.30	33	3.03	63	7.86	29	6.42	29
	2	89	Grape Lemonade	5.50	205	11.21	96	2.17	73	5.60	66	3.44	121
	3	102	Lemonade	6.53	65	17.30	34	2.49	69	9.33	19	5.48	44
	4	111	Grapeade	5.37	217	9.58	124	2.82	66	3.92	145	2.84	166
	5	286	Orangeade	5.85	141	12.21	74	4.08	54	5.13	81	3.00	150
	6	288	Limeade	5.58	184	10.45	108	1.58	89	5.21	79	3.66	108

Food Class	Survey Number	Food Item	Mean		Mean		Breakfast		Midday		Evening		
			Hedonic	Rank	Freq/Mo Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
MILK PRODUCTS													
	1	117	Eggnog	4.83	301	5.94	240	2.09	78	2.08	299	1.77	278
	2	341	Milk	8.03	1	67.54	1	23.11	1	22.44	1	22.00	1
	3	345	Chocolate Milk	7.42	6	39.14	3	12.88	10	13.83	4	12.43	5
	4	48	Milk Shake	7.16	17	19.60	21	1.34	96	10.39	12	7.86	19
CARBONATED BEVERAGES													
	1	304	Cola	7.14	19	26.99	8	1.62	87	13.89	3	11.48	8
	2	370	Orange Soda	6.39	75	15.36	43	1.47	92	7.97	26	5.92	40
	3	52	Lemon-Lime Soda	5.26	247	11.22	95	0.78	119	6.03	54	4.41	72
	4	268	Gingerale	6.01	122	10.98	101	0.64	127	5.96	57	4.38	73
	5	331	Grape Soda	5.90	138	13.08	57	1.10	103	6.83	37	5.15	50
	6	126	Cherry Soda	5.70	161	11.62	89	1.17	102	5.98	55	4.48	68
BEER													
	1	49	Beer	6.95	34	31.04	6	3.46	59	11.67	8	15.91	3
BEVERAGE BASES													
	1	269	Imitation Cherry	5.52	199	8.40	152	0.65	124	4.43	114	3.32	132
	2	101	Imitation Orange	5.39	235	11.61	90	3.46	58	4.69	102	3.46	119
	3	122	Imitation Lemon	5.05	275	6.66	207	1.22	100	3.22	205	2.22	225
	4	183	Imitation Lime	5.11	269	6.52	217	0.83	116	3.33	191	2.36	209
	5	320	Imitation Grape	5.41	230	10.74	105	2.12	76	5.01	83	3.61	111
MUFFINS													
	1	224	Blueberry Muffins	5.90	139	8.75	146	4.17	53	2.56	249	2.02	251
	2	321	Cake Muffins	5.57	188	5.72	252	2.41	70	2.02	306	1.29	339
	3	380	English Muffins	6.16	99	9.25	131	4.98	46	2.33	270	1.94	256

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean	Rank	Breakfast		Midday		Evening		
					Freq/Mo Total		Freq/Mo	Rank	Freq/Mo	Rank	Freq/Mo	Rank	
BREADS AND ROLLS													
	1	3	Whole Wheat Bread	5.64	176	35.97	5	11.32	14	12.58	5	12.07	6
	2	29	Toast	7.15	18	24.82	12	22.44	2	1.29	376	1.08	363
	3	112	Raisin Bread	5.20	257	7.73	172	4.28	51	1.96	310	1.49	314
	4	148	Cornbread	5.84	144	8.43	151	0.55	143	3.99	141	3.89	99
	5	168	Rye Bread	5.52	198	11.14	98	2.39	71	4.77	100	3.98	93
	6	202	White Bread	7.18	15	46.71	2	11.62	13	18.22	2	16.87	2
	7	242	French Bread	6.59	61	12.92	61	1.92	80	5.60	67	5.41	46
	8	347	Date Nut Bread	4.93	287	3.37	362	0.63	128	1.64	349	1.09	361
	9	191	Hot Rolls & Buns	7.46	4	29.60	7	4.33	50	12.03	6	13.25	4
	10	311	Biscuits	6.96	30	18.66	25	6.95	36	5.68	65	6.03	37
BUNS, DOUGHNUTS, ETC.													
	1	21	Hot Cross Buns	6.48	71	20.30	18	4.07	55	7.98	25	8.25	18
	2	153	Coffee Cake	5.49	211	6.89	196	4.84	47	1.19	384	0.86	383
	3	313	Doughnuts	6.67	57	12.48	70	9.45	22	1.69	340	1.33	333
	4	390	Sweet Rolls	6.86	41	15.63	41	8.34	29	3.88	151	3.41	124
	5	14	Danish Pastry	6.01	121	12.02	79	7.10	35	2.50	259	2.43	199
BREAKFAST CEREALS													
	1	55	Hominy Grits	4.21	373	4.53	302	2.70	67	0.85	404	0.98	372
	2	79	Hot Whole Wheat	4.88	292	7.09	189	6.39	42	0.33	416	0.37	415
	3	251	Farina	4.24	369	3.89	336	3.02	64	0.46	414	0.41	412
	4	326	Oatmeal	5.48	212	8.24	159	7.53	33	0.40	415	0.32	416

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					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
COOKIES													
	1	17	Sugar Cookies	5.24	253	9.50	126	1.25	99	4.74	101	3.51	116
	2	22	Hermit Cookies	4.53	339	7.79	169	1.21	101	3.92	147	2.67	176
	3	56	Molasses Cookies	4.20	373	3.57	352	0.47	166	1.89	323	1.22	348
	4	84	Lemon Cookies	4.80	307	4.19	320	0.36	198	2.32	272	1.50	313
	5	87	Chocolate Chip Cookies	6.27	86	13.63	52	1.34	95	7.19	32	5.09	53
	6	93	Vanilla Wafers	5.67	169	5.87	244	0.75	121	3.36	187	1.76	279
	7	97	Coconut Raisin	4.55	336	2.90	380	0.16	237	1.54	359	1.10	358
	8	100	Fruit Bars	4.70	323	3.63	347	0.39	185	1.90	321	1.34	329
	9	128	Raisin Drop Cookies	4.44	348	3.55	353	0.38	190	1.89	322	1.27	341
	10	161	Peanut Butter Cookies	5.50	209	6.48	219	0.53	152	3.64	164	2.32	216
	11	169	Coconut Drop Cookies	5.11	270	4.21	319	0.35	203	2.51	257	1.35	328
	12	194	Butternut Refrigerator	4.84	298	3.34	364	0.31	220	1.83	329	1.20	351
	13	207	Ginger Molasses	4.36	356	2.69	387	0.21	287	1.62	353	0.87	382
	14	208	Chewy Nut Bars	4.54	337	3.60	348	0.18	313	2.15	289	1.27	342
	15	247	Chocolate Drop	5.67	164	7.22	187	0.87	111	3.72	161	2.62	179
	16	252	Crisp Toffee Bars	4.47	344	3.03	375	0.57	138	1.56	358	0.90	378
	17	324	Oatmeal	5.54	195	6.19	229	0.82	117	3.17	206	2.21	228
PUDDINGS													
	1	36	Bread Pudding	4.39	353	4.41	308	0.27	233	1.90	319	2.23	223
	2	50	Cherry Cake Pudding	5.51	202	6.54	216	0.53	153	3.01	220	3.00	152
	3	75	Coconut Cream	5.38	236	8.35	154	0.56	142	4.18	128	3.61	112
	4	99	Vanilla Cream	5.43	225	6.96	194	0.54	150	3.57	168	2.86	164
	5	155	Chocolate Chip Bread	4.83	299	3.40	360	0.22	274	1.98	309	1.20	353
	6	165	Lemon Cake Pudding	5.42	228	4.42	307	0.36	197	2.28	277	1.77	274
	7	173	Chocolate Pudding	6.25	88	9.73	120	0.63	129	5.15	80	3.95	94
	8	259	Butterscotch	4.79	310	3.94	334	0.13	348	2.05	304	1.76	281
	9	291	Banana Cream	5.66	172	6.71	203	0.34	207	3.61	166	2.77	168
	10	303	Chocolate Coconut	5.50	206	5.55	262	0.31	218	2.74	237	2.49	193
	11	185	Chocolate Cake Pudding	5.50	204	5.50	265	0.23	269	2.70	239	2.57	188

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CAKES													
	1	5	Chocolate Cream	5.27	246	12.42	72	1.93	79	5.36	72	5.13	52
	2	9	Strawberry Shortcake	7.14	20	17.53	32	1.81	82	7.91	28	6.81	20
	3	77	Applesauce	5.18	260	4.79	292	0.39	186	2.23	282	2.17	233
	4	146	Fruitcake	4.86	293	3.58	350	0.27	236	1.77	333	1.54	311
	5	163	Spice	5.25	250	4.13	324	0.22	277	2.13	291	1.77	275
	6	187	Devil's Food	6.29	82	8.32	155	0.38	192	4.14	131	3.81	104
	7	196	Marble	5.66	171	5.56	260	0.28	230	2.60	246	2.68	175
	8	197	Banana	5.45	219	6.56	213	0.60	134	3.05	213	2.92	156
	9	214	White	5.84	143	6.87	198	0.47	165	3.46	179	2.93	155
	10	229	Pineapple Upsd Down	5.71	158	5.80	247	0.32	214	3.07	212	2.41	203
	11	230	Raspberry Shortcake	5.63	179	5.53	263	0.45	173	2.47	260	2.61	345
	12	231	Peanut Butter	4.78	312	2.94	379	0.20	297	1.50	362	1.24	345
	13	312	Peach Shortcake	6.05	119	6.13	233	0.35	202	3.12	208	2.66	177
	14	115	Yellow	5.34	241	5.94	241	0.45	172	2.91	227	2.58	187
	15	293	Yellow	5.56	191	5.98	237	0.22	283	3.26	199	2.51	190
PIES													
	1	11	Lemon Chiffon	5.65	175	9.58	123	0.85	113	4.43	115	4.31	76
	2	47	Cherry	6.26	87	11.43	94	0.55	144	5.50	70	5.37	47
	3	58	Mincemeat	3.93	393	2.79	385	0.17	319	1.33	372	1.28	340
	4	83	Raisin	3.76	409	2.18	393	0.17	221	1.05	391	0.96	373
	5	107	Blackberry	5.57	189	6.99	192	0.32	215	3.51	175	3.16	140
	6	150	Pineapple Chiffon	4.93	288	4.03	328	0.23	270	1.92	317	1.89	264
	7	162	Boston Cream	5.58	186	5.50	264	0.24	257	2.65	244	2.61	184
	8	177	Banana Cream	6.18	96	8.69	147	0.55	146	4.40	116	3.74	107
	9	181	Apple	6.87	39	11.78	85	0.77	120	5.87	61	5.14	51
	10	182	Boysenberry	5.16	262	4.51	303	0.32	213	2.12	295	2.06	245
	11	184	Pineapple	5.16	265	3.83	341	0.30	222	1.76	334	1.76	280
	12	217	Strawberry Chiffon	5.54	194	6.83	200	0.50	155	3.62	165	2.71	171
	13	227	Coconut Cream	5.50	207	5.98	238	0.32	216	3.04	214	2.62	180
	14	232	Peach	5.76	151	6.97	193	0.32	216	3.04	214	2.62	180
	15	239	Chocolate Cream	5.83	146	7.46	183	0.34	209	3.83	156	3.29	134
	16	248	Apricot	4.76	316	2.99	376	0.11	359	1.66	347	1.22	347

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PIES (Cont'd)													
	17	250	Pineapple Cream	5.04	277	3.46	357	0.21	291	1.80	330	1.45	322
	18	256	Pumpkin	5.98	124	6.88	197	0.24	256	3.31	193	3.33	130
	19	285	Butterscotch Cream	4.71	321	4.14	323	0.33	211	2.13	292	1.68	292
	20	302	Blueberry	5.96	126	6.67	206	0.37	196	3.03	217	3.27	135
	21	308	Lemon Meringue	5.74	152	6.56	212	0.25	248	3.41	184	2.90	159
SAUCES													
	1	64	Lemon Pudding Sauce	4.85	296	4.73	294	0.13	346	2.37	267	2.22	224
	2	137	Vanilla Pudding Sauce	4.95	285	4.99	287	0.61	130	2.44	261	1.94	258
	3	319	Custard Pudding Sauce	4.74	318	3.28	367	0.10	368	1.87	326	1.31	335
	4	228	Hot Fudge Sauce	5.58	185	5.56	259	0.26	238	2.88	228	2.42	200
	5	4	Butterscotch Sauce	3.77	407	5.28	274	0.93	110	2.15	288	2.20	229
	6	90	Butterscotch Sauce	4.37	355	3.37	363	0.16	325	1.49	363	1.72	287
	7	193	Pineapple Sauce	4.80	306	3.54	354	0.73	122	1.65	348	1.16	354
ICE CREAM													
	1	166	Ice Cream	7.32	8	19.36	22	0.65	123	9.60	18	9.11	15
	2	209	Sherbert	5.98	123	10.34	110	0.49	158	5.39	71	4.46	71
	3	362	Ice Cream Sundae	7.05	24	13.85	46	0.48	161	7.07	33	6.30	30
	4	373	Banana Split	7.05	23	11.49	92	0.50	157	6.08	51	4.91	57
	5	334	Soft Serve Ice Cream	6.73	51	13.77	48	0.39	187	6.75	39	6.64	26
	6	48	Milk Shake	7.16	17	19.60	21	1.34	96	10.39	12	7.86	19
OTHER DESSERTS													
	1	24	Apricot Crisp	4.86	295	5.49	266	1.39	93	2.33	269	1.77	276
	2	69	Peach Crisp	5.63	178	6.70	204	0.60	133	2.98	222	3.12	142
	3	108	Brownies	6.21	91	9.77	118	0.98	109	4.93	90	3.87	102
	4	135	Gingerbread	4.80	308	4.63	297	1.01	108	2.15	290	1.48	315
	5	138	Apple Crisp	5.74	154	8.23	160	1.02	107	4.04	135	3.16	139
	6	192	Butterscotch Brownies	5.01	279	3.91	335	0.47	164	1.83	328	1.60	300
	7	329	Cherry Crisp	5.69	163	5.63	255	0.42	181	2.94	225	2.27	219
	8	254	Strawberry Gelatin	5.64	177	5.89	242	0.41	182	3.46	180	2.03	250
	9	76	Applesauce	6.05	117	11.79	84	3.17	61	4.53	109	3.97	92
	10	116	Fruit Cocktail (Canned)	6.35	79	11.49	93	2.10	77	5.35	73	4.04	88

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean Freq/Mo		Breakfast		Midday		Evening		
					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
FRUITS													
	1	10	Bananas	6.82	43	16.91	36	10.76	18	3.27	197	2.89	163
	2	23	Oranges	7.16	16	19.75	20	11.71	12	4.79	99	3.25	136
	3	141	Oranges	7.33	7	18.37	27	11.19	15	4.04	136	3.14	141
	4	40	Apples (fresh)	7.20	14	19.78	19	8.58	26	6.67	40	4.53	66
	5	46	Grapefruit (fresh)	5.96	128	12.02	81	10.16	19	1.02	393	0.85	384
	6	61	Pears (fresh)	6.80	44	17.70	30	6.82	38	6.07	40	4.53	66
	7	86	Plums (fresh)	5.44	221	8.48	150	4.21	52	2.40	264	1.87	267
	8	96	Peaches (fresh)	7.04	25	16.23	38	6.61	39	5.34	74	4.28	77
	9	98	Tangerines	6.64	58	12.85	65	6.86	37	3.37	186	2.62	182
	10	109	Honeydew Melon	5.73	155	7.52	181	3.19	62	2.52	253	1.80	272
	11	118	Pineapple (Canned)	5.51	201	8.08	163	2.52	68	3.23	203	2.33	214
	12	289	Pineapple (Canned)	5.65	174	6.59	209	1.86	81	2.83	234	1.90	260
	13	124	Plums (Canned)	4.60	332	4.42	306	1.81	83	1.67	345	0.95	377
	14	130	Watermelon	6.99	29	11.78	86	0.86	112	5.93	58	4.98	54
	15	139	Grapes	6.50	69	11.02	100	3.52	57	4.61	106	2.89	160
	16	34	Sweet Cherries (Canned)	5.18	259	5.61	257	0.60	131	2.59	247	2.41	204
	17	152	Apricots (Canned)	5.00	281	4.65	296	1.66	86	1.78	332	1.21	349
	18	198	Peaches (Canned)	6.39	73	11.64	87	3.31	60	4.93	91	3.40	126
	19	211	Pears (Canned)	6.27	84	10.20	113	2.96	65	4.20	124	3.05	147
	20	222	Figs (Canned)	3.86	405	1.89	406	0.46	170	0.84	405	0.59	401
	21	235	Grapefruit (Canned)	5.38	237	6.32	222	4.41	49	1.11	387	0.81	388
	22	264	Cantaloupe	6.37	77	9.71	121	3.99	56	3.11	211	2.62	181
	23	323	Prunes (Canned)	4.22	371	3.34	365	1.74	85	0.96	397	0.64	397
	24	76	Applesauce	6.05	117	11.79	84	3.27	61	4.53	109	3.99	92
	25	116	Fruit Cocktail (Canned)	6.34	79	11.49	93	2.10	77	5.33	73	4.04	88
	26	120	Apples (Canned)	5.31	243	5.05	284	1.56	90	2.06	302	1.43	323
BREAKFAST MEATS													
	1	74	Bacon	7.21	21	20.94	17	19.91	5	0.55	412	0.47	411
	2	172	Sausage Links	6.48	70	12.36	73	10.86	17	0.86	400	0.64	398
	3	88	Pork Sausage Patties	6.24	90	11.97	82	9.81	20	1.20	383	0.95	376
	4	246	Ham	6.72	54	12.81	67	5.14	45	4.02	138	3.65	110
	5	92	Ham	6.79	47	12.55	68	4.43	48	4.05	134	4.07	82

Food Class	Survey Number	Food Item	Mean		Mean		Breakfast		Midday		Evening		
			Hedonic	Rank	Freq/Mo Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
EGGS													
	1	176	Scrambled Eggs	6.69	56	14.75	45	13.62	9	0.65	410	0.48	410
	2	271	Eggs to Order	7.28	11	22.17	16	20.85	3	0.70	409	0.61	399
	3	273	Hard Cooked Eggs	5.44	222	7.75	170	5.62	43	1.32	375	0.80	389
	4	348	Deviled Eggs	5.96	127	7.70	173	1.29	97	3.90	149	2.51	191
	5	409	Omelet	5.93	134	9.23	133	7.84	32	0.86	402	0.52	405
	6	415	Fried Eggs	7.05	22	18.38	26	17.10	7	0.79	408	0.49	409
FISH AND SEAFOOD													
	1	213	Fish Sticks	6.13	102	7.55	179	0.26	239	3.99	140	3.30	133
	2	121	Fish	6.16	98	7.58	178	0.28	231	3.42	181	3.87	101
	3	175	Shrimp Creole	5.40	233	4.76	293	0.12	351	2.27	278	2.37	207
	4	241	Shrimp, Breaded	6.10	112	8.20	161	0.14	337	4.02	139	4.04	87
	5	275	Tuna Salad	6.06	115	7.30	185	0.18	314	4.89	93	2.23	222
	6	332	Seafood Platter	6.19	93	7.60	176	0.20	299	3.52	174	3.89	98
	7	353	Sardines	4.34	359	2.77	386	0.16	329	1.54	360	1.07	364
	8	354	Baked Tuna & Noodles	5.43	227	4.34	311	0.02	411	2.50	258	1.81	271
	9	357	Lobster	6.20	92	9.10	135	0.35	205	3.84	155	4.91	56
	10	384	Lobster Newburg	5.44	223	6.26	225	0.09	374	3.16	207	3.01	148
	11	68	Salmon	5.50	208	5.25	276	0.20	293	2.63	245	2.42	202
	12	71	Fried Oysters	4.32	362	4.22	317	0.16	330	1.90	320	2.17	232
	13	343	Scalloped Tuna & Peas	4.78	314	2.89	381	0.11	361	1.58	356	1.21	350
PASTA — MAIN DISH													
	1	65	Baked Macaroni & Cheese	5.87	140	7.81	167	0.22	273	4.06	132	3.53	115
	2	31	Pizza	6.82	42	9.29	130	0.54	148	4.74	105	4.11	81
	3	72	Lasagna	5.29	182	5.66	254	0.07	391	2.54	250	3.06	146
	4	160	Spaghetti	7.03	26	8.94	139	0.15	333	4.24	122	4.56	64
	5	338	Ravioli	6.01	120	5.70	253	0.14	341	3.30	195	2.27	220
	6	59	Chili Macaroni	5.20	258	6.77	202	0.24	258	3.56	169	2.97	153

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GRIDDLE CAKES, FRENCH TOAST													
	1	125	Griddle Cakes	5.59	183	9.52	125	8.27	30	0.86	401	0.39	413
	2	180	French Toast	6.79	46	13.69	50	12.82	11	0.48	413	0.39	414
MEATS													
	1	16	Lamb Roast	5.47	214	7.60	177	0.57	139	3.00	221	4.03	90
	2	27	Polish Sausage	5.33	242	7.14	188	2.13	75	2.86	229	2.14	235
	3	30	Lamb Chops	5.92	136	8.40	153	0.49	159	3.69	162	4.22	78
	4	54	Roast Beef	6.86	40	12.02	80	0.37	194	5.77	64	5.89	41
	5	85	Swiss Steak	6.93	36	12.42	71	0.55	145	5.59	69	6.29	31
	6	92	Ham	6.79	47	12.55	68	4.43	48	4.05	134	4.07	82
	7	246	Ham	6.72	53	12.81	67	5.14	45	4.02	138	3.65	110
	8	157	Turkey	6.99	28	9.85	117	0.24	259	4.83	96	4.79	60
	9	199	Pork Roast	6.59	62	8.25	158	0.19	307	4.17	129	3.89	97
	10	200	Veal Roast	6.10	111	6.59	210	0.11	357	2.98	223	3.49	118
	11	237	Spareribs w/Sauerkraut	5.07	271	4.49	304	0.04	406	2.11	296	2.34	212
	12	143	Sliced Roast Pork w/Gravy	6.54	64	8.93	142	0.22	276	4.51	112	4.20	79
	13	265	Pot Roast	6.79	45	8.17	162	0.18	315	3.85	153	4.15	80
	14	301	Grilled Steak	7.61	3	17.70	31	1.27	98	7.93	27	8.50	17
	15	307	Liver	4.19	375	3.58	351	0.10	365	1.62	352	1.85	270
	16	322	Corned Beef	5.22	256	4.31	313	0.12	356	2.30	274	1.90	261
	17	333	Chicken	7.26	12	12.90	62	0.42	177	6.40	47	6.70	36
	18	346	Barbecued Spareribs	6.93	35	9.43	128	0.30	224	4.65	104	4.47	70
	19	350	Salisbury Steak	6.92	37	10.74	104	0.53	151	5.24	77	4.97	55
	20	352	Fried Chicken	7.43	5	13.49	54	0.40	184	6.56	43	6.54	27
	21	356	Barbecued Beef Cubes	6.14	101	5.35	271	0.07	389	3.04	215	2.25	221
	22	364	Veal Parmesan	5.44	224	3.89	337	0.03	410	2.15	287	1.71	288
	23	371	Vealburger	5.83	145	5.34	273	0.15	334	3.11	210	2.08	244
	24	375	Breaded Veal Steaks	6.33	80	8.32	156	0.28	228	3.98	143	4.05	85
	25	377	Baked Stuffed Pork SI	5.95	129	4.35	310	0.06	397	2.25	279	2.04	249
	26	387	Swedish Meat Balls	5.76	150	5.83	246	0.02	413	3.34	190	2.47	197
	27	399	Pepper Steak	5.77	149	6.54	215	0.23	265	3.42	182	2.89	162
	28	221	Italian Sausage	5.92	135	6.90	195	2.17	72	2.73	238	2.00	252

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MEATS (Cont'd)													
	29	223	Chili Con Carne	5.74	153	6.09	234	0.09	377	3.84	154	2.16	234
	30	159	Chili Con Carne w/beans	5.80	147	6.23	227	0.27	235	3.59	167	2.37	208
	31	91	Turkey Slice w/Gravy	6.62	60	10.80	102	0.30	225	5.06	82	5.44	45
	32	376	Meat Loaf	6.77	48	9.10	134	0.22	279	4.53	110	4.35	74
POTATOES													
	1	131	French Fried	7.28	10	17.11	35	0.60	132	10.36	13	6.15	34
	2	147	Scalloped Potatoes	5.47	215	5.88	243	0.23	268	2.96	224	2.69	174
	3	158	Potato Chips	6.90	38	12.16	76	0.23	266	7.99	24	3.94	96
	4	189	Sweet Potatoes	5.06	272	5.07	283	0.18	311	2.29	276	2.59	185
	5	212	Instant Mashed Potatoes	4.77	315	6.59	211	0.11	362	3.28	196	3.21	137
	6	220	Baked Potatoes	6.52	67	8.94	140	0.24	263	2.93	146	4.79	61
	7	382	Hashed Brown Potatoes	6.76	49	13.64	51	7.50	34	3.24	202	2.91	158
	8	32	Potato Salad	6.39	74	9.92	114	0.48	162	5.60	68	3.85	103
	9	365	Mashed Potatoes	6.75	50	17.75	29	0.28	227	8.54	23	8.92	16
BEANS													
	1	404	Boston Baked	5.52	200	6.32	223	0.07	385	3.73	160	2.51	192
	2	42	Beans w/Pork in Tom/Sauce	5.17	261	6.50	218	0.34	206	3.75	159	2.41	205
RICE													
	1	132	Rice	5.46	218	9.06	138	0.83	115	4.19	126	4.04	89
	2	290	Fried Rice	5.15	266	5.37	269	0.36	199	2.67	243	2.34	210
	3	360	Rice Pilaf	4.41	352	2.40	395	0.08	383	1.34	371	0.98	371
	4	378	Spanish Rice	5.54	193	6.15	232	0.21	284	3.24	200	2.69	173
FRITTERS													
	1	374	Fritters	5.25	248	4.26	315	0.58	136	2.06	303	1.62	296

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SHORT ORDER, SANDWICHES													
	1	26	Bologna (Cold Cuts)	5.05	274	5.78	248	0.57	140	3.50	177	1.71	289
	2	8	Hamburger	6.95	33	15.96	39	1.03	106	9.25	20	5.67	43
	3	105	Cheeseburger	6.96	31	12.81	66	0.38	188	8.62	22	3.81	105
	4	174	Frankfurters	6.18	95	6.78	201	0.58	137	4.32	121	1.88	266
	5	38	Salami (Cold Cuts)	4.69	326	4.82	290	0.33	210	2.86	230	1.63	295
	6	73	Sloppy Joe	6.51	68	8.93	141	0.21	285	5.32	76	3.40	125
	7	94	Turkey Club Sandwich	6.42	72	7.49	182	0.21	290	4.69	103	2.59	186
	8	154	Submarine Sandwich	6.12	107	6.68	205	0.22	281	4.52	111	1.95	255
	9	226	Luncheon Meat (Cold Cuts)	5.35	240	5.57	258	0.22	275	3.89	150	1.46	316
	10	263	Ham (Cold Cuts)	5.97	125	6.41	221	0.46	169	4.20	125	1.75	283
	11	274	Chicken Club Sandwich	6.13	103	6.55	214	0.14	342	4.82	97	1.59	304
	12	294	Turkey (Cold Cuts)	6.06	116	6.60	208	0.14	309	4.36	119	2.06	247
	13	310	Grilled Cheese & Ham	6.63	59	9.50	127	0.42	178	6.55	44	2.53	189
	14	328	Meatball Sub.	5.54	192	5.27	275	0.22	278	3.35	189	1.70	290
	15	386	Cervelat (Cold Cuts)	4.49	343	2.82	384	0.04	408	2.00	308	0.79	391
	16	389	Hot Roast Beef Sand w/Gvy	6.96	32	10.45	107	0.35	201	6.06	53	4.04	86
	17	392	Bacon, Let & Tom Sandwich	7.23	13	11.80	83	1.59	88	7.30	30	2.91	157
	18	394	Hot Turkey Sandwich w/Gvy	7.01	27	9.74	119	0.26	242	5.97	56	3.51	117
	19	406	Grilled Cheese	6.72	55	8.61	148	0.44	175	5.80	63	2.38	206
	20	205	Tacos	5.91	137	8.28	157	0.51	154	4.38	117	3.39	128
	21	299	Hot Tamales	5.43	226	6.03	235	0.45	174	3.26	198	2.32	215
	22	31	Pizza	6.82	42	9.29	130	0.54	148	4.64	105	4.11	81
	23	367	Liverwurst	4.25	366	2.97	377	0.12	355	1.79	331	1.07	366
	24	369	Western Sandwich	5.94	130	5.37	270	0.22	272	3.55	171	1.59	303
	25	266	Shredded Beef/Barb Sauce	6.29	81	6.20	228	0.06	394	3.42	183	2.72	169
	26	414	Fish	5.93	133	6.23	226	0.16	326	3.98	142	2.09	241
PASTA—SIDE DISH													
	1	234	Noodles	5.66	173	5.55	261	0.38	191	2.84	233	2.34	211
	2	72	Lasagna	5.59	182	5.66	254	0.07	391	2.54	250	3.06	146
	3	114	Macaroni Salad	4.91	291	5.73	251	0.12	353	3.32	192	2.29	218

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PASTA—SIDE DISH (Cont'd)													
	4	160	Spaghetti	7.03	26	8.94	139	0.15	333	4.24	122	4.56	64
	5	338	Ravioli	6.01	120	5.70	253	0.14	341	3.30	195	2.27	220
	6	59	Chili Macaroni	5.20	258	6.77	202	0.24	258	3.56	169	2.97	153
CASSEROLES, STEWS, ETC.													
	1	37	Stuffed Cabbage	4.02	388	3.07	373	0.18	317	1.35	369	1.54	310
	2	44	Chicken Cacciatore	5.05	276	5.47	267	0.24	261	2.53	251	2.71	170
	3	81	Chop Suey	4.74	319	4.26	316	0.05	404	2.04	305	2.17	231
	4	82	Stuffed Grn Peppers	4.59	333	4.29	314	0.05	402	2.12	294	2.12	239
	5	110	Chow Mein	4.92	290	4.21	318	0.15	331	2.17	286	1.89	263
	6	129	Chicken a la King	5.61	181	5.94	239	0.14	344	2.92	226	2.89	161
	7	149	Corned Beef Hash	4.80	313	3.76	344	0.43	176	2.00	307	1.34	330
	8	270	Beef Stew	6.36	78	7.09	190	0.26	241	3.98	144	2.85	165
	9	325	Creamed Chipped Beef	5.13	267	4.84	289	1.78	84	1.71	339	1.34	332
	10	351	Hungarian Goulash	5.35	239	4.37	309	0.11	363	2.34	268	1.93	259
	11	355	Chicken Tetrazzini	5.16	264	3.33	366	0.12	349	1.88	324	1.33	334
	12	395	Beef Stroganoff	6.07	114	5.03	285	0.02	412	2.52	255	2.49	194
	13	398	Beef Pot Pie	5.70	160	5.34	272	0.09	375	3.11	209	2.14	236
	14	401	Sauerbraten	4.12	380	1.56	414	0.05	403	0.81	406	0.69	394
	15	405	El Rancho Stew	5.24	252	4.48	305	0.02	414	2.86	231	1.60	302
	16	407	Turkey Pot Pie	5.94	132	6.02	236	0.06	395	3.54	173	2.42	201
	17	318	Sweet & Sour Pork	4.80	309	2.96	378	0.14	338	1.59	355	1.22	346
	18	283	Sukiyaki	3.94	392	2.12	400	0.21	286	0.95	398	0.96	374
	19	361	Veal Scallopini	4.99	283	3.14	369	0.07	387	1.64	350	1.43	324
	20	354	Baked Tuna & Noodles	5.43	227	4.34	311	0.02	411	2.50	258	1.81	271
	21	343	Scalloped Tuna & Peas	4.78	314	2.89	381	0.11	361	1.58	356	1.21	350
	22	175	Shrimp Creole	5.40	233	4.76	293	0.12	351	2.27	278	2.37	207
	23	384	Lobster Newburg	5.44	223	6.26	225	0.09	374	3.16	207	3.01	148

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FRUIT SALADS													
	1	33	Banana Salad	5.04	278	5.01	286	0.42	179	2.70	240	1.89	262
	2	233	Fruit Salad (Ass't Fruit)	.84	142	10.43	109	1.04	105	5.32	75	4.07	83
	3	240	Pineapple Cheese Salad	4.34	360	2.57	390	0.06	296	1.42	365	1.09	362
	4	287	Cottage Cheese & Fruit	4.81	305	5.78	249	0.37	195	3.35	188	2.06	246
	5	296	Mixed Fruit Salad	5.70	159	8.83	144	0.64	125	4.86	95	3.38	131
	6	7	Jellied Fruit Salad	4.93	286	12.89	63	1.37	94	6.30	48	5.22	49
	7	282	Waldorf Salad (Apples, Celery & Raisin)	4.08	383	3.39	361	0.17	322	1.86	327	1.36	327
VEGETABLE SALADS													
	1	25	Pickled Beet/Onion	3.01	416	2.56	391	0.14	343	1.18	385	1.25	343
	2	39	Cole Slaw	5.25	251	8.91	143	0.36	200	4.89	92	3.66	109
	3	78	Lettuce & Tomato Salad	6.28	83	23.78	13	0.48	160	11.74	7	11.55	7
	4	103	Carrot Salad	4.24	368	3.04	374	0.09	373	1.75	336	1.20	352
	5	119	Carrot, Raisin & Celery	3.56	410	2.83	382	0.17	320	1.41	366	1.24	344
	6	170	Tossed Green Salad	6.56	63	22.32	15	0.12	350	11.14	10	11.06	9
	7	171	Cuc,Onion & Sweet Pepper	4.04	387	4.11	326	0.26	243	2.24	280	1.61	299
	8	186	Frijole Salad	4.07	385	1.68	412	0.04	409	1.14	386	0.50	407
	9	225	Tos Cuc & Tom Salad	4.98	284	7.25	186	0.11	300	4.14	130	3.00	151
	10	261	Tossed Veg Salad	5.72	157	13.01	59	0.07	386	6.75	38	6.19	32
	11	272	Cabbage & Sweet Pepper	3.88	403	1.74	409	0.07	392	1.10	388	0.57	403
	12	277	Lettuce Salad	6.19	94	16.71	37	0.22	280	8.87	21	7.63	22
	13	281	Cucumber & Onion	3.80	406	3.17	368	0.11	358	1.67	342	1.39	326
	14	314	Garden Cot Cheese Salad	4.70	325	3.87	340	0.47	167	2.09	297	1.31	337
	15	330	Vegetable Slaw	4.71	322	4.19	321	0.07	390	2.38	266	1.74	284
	16	32	Potato Salad	6.39	74	9.92	114	0.48	162	5.60	68	3.85	103
	17	114	Macaroni Salad	4.91	291	5.73	251	0.12	353	3.32	192	2.29	218
	18	249	Chef's Salad	5.69	165	9.08	136	0.19	306	4.82	98	4.07	84
	19	284	Kidney Bean Salad	3.91	394	2.11	402	0.01	415	1.21	382	0.90	379
	20	327	Pickled Green Beans	4.31	363	2.12	401	0.07	384	1.25	378	0.80	390

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean Freq/Mo		Breakfast		Midday		Evening		
					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
GREEN VEGETABLES													
	1	18	Green Beans	5.67	168	13.40	55	0.46	168	6.27	49	6.66	25
	2	123	Lima Beans	4.44	349	4.79	201	0.25	246	2.32	271	2.22	227
	3	204	Asparagus	4.46	346	4.17	322	0.31	221	2.20	285	1.67	294
	4	244	Peas (Canned)	5.29	245	7.74	171	0.08	381	4.23	123	3.43	123
	5	297	Green Beans (Canned)	5.48	213	7.64	175	0.06	398	4.05	133	3.53	114
	6	298	Peas	5.57	187	8.00	164	0.06	393	3.91	148	4.03	91
	7	305	Broccoli	4.51	341	4.31	312	0.24	262	2.22	283	1.85	269
	8	309	Spinach	4.61	331	4.62	208	0.15	336	2.39	265	2.09	243
	9	316	Mustard Greens	3.89	398	2.30	396	0.07	388	1.23	379	1.00	370
	10	225	Cabbage	4.04	330	3.98	333	0.12	354	2.07	300	1.79	273
	11	258	Brussels Sprouts	3.96	391	3.08	371	0.12	352	1.51	361	1.45	321
	12	366	Okra	4.19	374	3.63	346	0.08	379	1.95	312	1.60	301
YELLOW VEGETABLES													
	1	13	Creamed Style Corn	6.13	104	13.82	47	0.78	118	6.62	42	6.42	28
	2	28	Wax Beans	4.22	370	4.58	301	0.34	208	2.29	275	1.95	253
	3	70	Corn-on-the-Cob	7.29	9	13.74	49	0.25	250	6.43	45	7.05	24
	4	178	Corn (Canned)	6.72	52	13.02	58	0.20	300	8.83	36	5.99	38
	5	151	Carrots	5.40	231	7.81	168	0.20	296	4.51	113	3.11	144
	6	113	Yellow Squash	3.88	402	3.07	372	0.42	180	1.34	370	1.31	336
OTHER VEGETABLES													
	1	35	Peas & Carrots	5.00	282	9.35	129	0.28	232	4.55	108	4.52	67
	2	45	Radishes	4.85	297	9.91	115	0.33	212	4.97	84	4.61	63
	3	63	Mixed Vegetables	5.61	180	14.97	44	0.35	204	7.25	31	7.37	23
	4	80	Cooked Onions	3.89	399	3.88	338	0.08	380	1.91	318	1.88	265
	5	95	Cauliflower	4.01	390	3.40	359	0.09	376	1.57	357	1.75	282
	6	134	Zucchini Squash	3.21	414	2.26	397	0.19	305	1.06	390	1.01	368
	7	142	Tomatoes (Canned)	4.75	317	5.11	280	0.31	219	2.85	232	1.95	254
	8	280	Beets	4.09	382	3.59	349	0.16	327	1.73	338	1.70	291
	9	359	Stewed Tomatoes	4.50	342	3.73	345	0.16	328	1.96	311	1.61	298

Food Class	Survey Number	Food Item	Mean Hedonic	Rank	Mean Freq/Mo		Breakfast		Midday		Evening		
					Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
OTHER VEGETABLES (Cont'd)													
	10	396	Sliced Tomatoes	6.27	85	17.95	28	0.58	135	9.64	17	7.72	21
	11	245	Eggplant	3.43	412	2.46	392	0.16	323	1.29	377	1.01	367
	12	295	Succotash	3.88	404	2.10	403	0.05	400	1.21	381	0.83	385
	13	300	Blackeye Peas	4.66	328	4.65	295	0.24	255	2.32	273	2.09	242
	14	315	Rutabagas Turnip	3.48	411	1.79	408	0.21	292	0.85	403	0.73	393
	15	43	Parsnips	3.10	415	1.27	416	0.18	318	0.60	411	0.50	408
	16	53	Turnip Greens	3.90	397	3.52	355	0.20	295	1.73	337	1.58	307
	17	362	French Fried Onion Rings	6.15	100	10.35	111	0.10	364	5.91	59	4.31	75
	18	188	Sauerkraut	4.58	338	3.88	339	0.13	347	2.07	301	1.67	293
SOUPS													
	1	6	Manhattan Clam Chowder	3.73	408	3.82	342	0.38	193	1.92	316	1.52	312
	2	12	Cream of Potato Soup	4.26	365	4.02	330	0.24	260	2.20	284	1.57	308
	3	20	Beef Barley Soup	4.12	379	4.88	288	0.27	234	2.57	248	2.04	248
	4	41	Pea Soup	4.05	386	3.08	370	0.25	245	1.67	343	1.16	355
	5	51	Cream of Mushroom Soup	4.35	358	4.62	299	0.25	253	2.79	235	1.58	305
	6	60	Bean Soup	4.57	334	4.03	329	0.21	288	2.24	281	1.58	306
	7	104	Tom Vegetable w/Noodles	4.64	329	5.73	250	0.25	251	3.76	158	1.72	285
	8	156	Tomato Soup	5.31	244	5.10	281	0.25	247	3.23	204	1.62	297
	9	179	Turkey Rice Soup	5.06	273	3.99	332	0.18	316	2.51	256	1.30	338
	10	190	Turkey Noodle Soup	5.69	166	6.19	230	0.30	226	3.77	157	2.12	238
	11	195	Minestrone Soup	4.37	354	2.67	388	0.09	372	1.62	351	0.96	375
	12	215	Beef Rice Soup	4.82	303	3.41	358	0.19	310	2.13	293	1.10	360
	13	216	Corn Chowder	4.25	367	2.04	404	0.04	405	1.33	373	0.67	395
	14	238	Vegetable Soup	5.36	238	6.30	224	0.14	339	4.03	137	2.13	237
	15	257	Onion Soup	3.90	395	2.14	399	0.10	367	1.23	380	0.81	387
	16	262	Cheese Soup	3.88	401	1.44	415	0.14	340	0.79	407	0.51	406
	17	267	Chicken Noodle Soup	6.17	97	7.67	174	0.23	267	4.95	85	2.49	195
	18	306	Beef Noodle Soup	5.42	229	5.44	268	0.26	244	3.24	201	1.94	257
	19	339	Knickerbocker Soup	4.02	389	1.61	413	0.04	407	0.99	395	0.58	402
	20	340	Pepper Pot Soup	3.90	396	2.01	405	0.26	240	0.94	399	0.81	386

Food Class	Survey Number	Food Item	Mean		Mean		Breakfast		Midday		Evening		
			Hedonic	Rank	Freq/Mo Total	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	Mean Freq/Mo	Rank	
SOUPS (Cont'd)													
	21	383	Mulligatawny Soup	4.15	378	1.71	410	0.08	382	1.03	392	0.60	400
	22	403	Creole Soup	4.07	384	1.88	407	0.20	294	1.02	394	0.66	396
	23	413	Fish Chowder	4.27	364	2.46	393	0.01	416	1.69	3.41	0.76	392

APPENDIX B

RELATIONSHIP BETWEEN PREFERENCE SCALES

Appendix B illustrates the relationship between the mean hedonic rating and the mean frequency rating for each meal for each food by subclass. The meal and the subclass are indicated in the title of each table. High and low categories were established using 15% cutpoints. That is, the high foods for each scale represent those items falling in the top 15% of all items for that scale and for that meal. The items were then placed in a 3 x 3 matrix composed of the low, moderate and high categories for each preference scale. Thus the low-low block contains food items falling in the lowest 15% on both hedonic and frequency scales.

THE RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *BREAKFAST MAIN DISHES*

F R E Q U E N C Y S C A L E	HEDONIC SCALE		
	LOW	MODERATE	HIGH
	LOW		
	MODERATE	Pork Sausage Links Pork Sausage Patties Ham Hard Cooked Eggs Omelet Griddle Cakes French Toast	
HIGH		Bacon Scrambled Eggs	Fried Eggs Eggs to Order

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *BREAKFAST BEVERAGES*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	HEDONIC SCALE		
	LOW	MODERATE	HIGH
	LOW	Cranberry Juice	
	MODERATE	Instant Coffee Freeze Dried Coffee	Grape Juice Grapefruit & Pineapple Juice Pineapple Juice Tomato Juice Grapefruit Juice Grapefruit & Orange Juice Orange & Pineapple Juice Tea Hot Cocoa
	HIGH		Instant Orange Juice Fresh Coffee Orange Juice Milk Chocolate Milk

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *BREAKFAST BREADS AND CEREALS*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	HEDONIC SCALE			
		LOW	MODERATE	HIGH
	LOW	Date Nut Bread	Corn Bread Rye Bread	
	MODERATE	Hominy Grits Hot Whole Wheat Cereal Farina	Blueberry Muffins English Muffins Biscuits Hot Cross Buns Coffee Cake Doughnuts Sweet Rolls Danish Pastry	Oatmeal Cake Muffins Hot Rolls & Buns
	HIGH		Whole Wheat Bread	White Bread Toast

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *BREAKFAST FRUITS*

HENDONIC SCALE

F R E Q U E N C Y S C A L E	HENDONIC SCALE			
	LOW	MODERATE	HIGH	
	LOW	Canned Plums Canned Figs Canned Prunes	Canned Apricots	
	MODERATE		Bananas Fresh Grapefruit Fresh Pears Fresh Plums Fresh Peaches Tangerines Honeydew Melon Canned Pineapple	Canned Peaches Canned Pears Canned Grapefruit Cantaloupe Applesauce Oranges Fresh Apples
	HIGH			

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY MAIN DISHES*

HEDONIC SCALE

	LOW		MODERATE		HIGH
Low	A. Sardines B. Beef Liver				
Moderate	A. Fried Oysters D. Liverwurst	A. Fish Shrimp Creole Breaded Shrimp Tuna Salad Seafood Platter Baked Tuna & Noodles Lobster Lobster Newburg Salmon B. Bk. Macaroni & Chse. Lasagna Ravioli Chili Macaroni	C. Veal Roast Spareribs /Sauerkraut Corned Beef BBQ Beef Cubes Veal Parmesan Veal Burger Breaded Veal Steaks Bk. Stuffed Pork Sl. Swedish Meat Balls Pepper Steak Italian Sausage Chili Con Carne Chili Con Carne /Beans Lamb Roast Polish Sausage Lambchops	D. Bologna (c.c.) Frankfurter Salami Sloppy Joe Ham (c.c.) Turkey Club Sand. Submarine Sand. Luncheon Meat Chicken Club Sand. Meatball Sub. Cervelat (c.c.) Tacos Hot Tamales Western Sand. Shredded Beef w/BBQ Fish Sand.	B. Pizza Spaghetti C. Roast Beef Canned Ham Sl. R. Pork/Gr. Roast Pork Pot Roast BBQ Spare Ribs Salisbury Steak Turkey Sl./Gr. Meat Loaf Swiss Steak Turkey Ham D. Grilled Chse Sand. C. Grilled Steak Chicken Fried Chicken D. Hamburger Cheeseburger Gr. Chse. & Ham Hot R. Beef Sand Gr. BLT Sandwich Hot Turkey Sand Gr.
High					

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY CASSEROLES AND COMBINATION MAIN DISHES*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	HEDONIC SCALE			
	LOW	MODERATE		HIGH
	LOW	Stuffed Cabbage Sauerbraten Sukiyaki	Sweet & Sour Pork Veal Scallopini Scalloped Tuna & Peas	
	MODERATE		Chicken Tetrazini Chicken Cacciatore Chop Suey Stuffed Green Peppers Chow Mein Chicken A La King Corned Beef Hash Beef Stew (Canned) Creamed Chip Beef	Hungarian Goulash Beef Stroganoff Beef Pot Pie El Rancho Stew Turkey Pot Pie Baked Tuna & Noodles Shrimp Creole Lobster Newburg
	HIGH			

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY BEVERAGES*

HEDONIC SCALE

		LOW	MODERATE		HIGH
F R E Q U E N C Y S C A L E	LOW				
	MODERATE	Iced Coffee Freeze Dried Coffee	Grape Lemonade Grapeade Orangeade Limeade Imitation Cherry Imitation Orange Imitation Lemon Imitation Lime Imitation Grape	Instant Coffee	Hot, Cocoa
	HIGH		Fruit Punch Orange Soda Lemon Lime Soda Grape Soda	Gingerale Cherry Soda Iced Tea Tea Fresh Coffee	Lemonade Milk Beer Milk Shake Cola Chocolate Milk

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY BREADS*

HEDONIC SCALE

F R E S Q C U A E L N E C Y	HEDONIC SCALE		
	LOW	MODERATE	HIGH
	LOW	Date Nut Bread	Toast
	MODERATE	Cake Muffins English Muffins Raisin Bread Corn Bread Rye Bread	French Bread Biscuits Sweet Rolls
	HIGH	Whole Wheat Bread Hot Cross Buns	Hot Rolls & Buns White Bread

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY POTATOES & STARCHES*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y	LOW	Rice Pilaff		
	MODERATE	Scalloped Potatoes Sweet Potatoes Mashed Potatoes, Instant Baked Potatoes Potato Salad Noodles Lasagna Macaroni Salad	Ravioli Chili Macaroni Boston Baked Beans Beans w/Pork in Tomato Sauce Rice Fried Rice Spanish Rice Fritters	Hashed Brown Potatoes Spaghetti
	HIGH			French Fried Potatoes Potato Chips Mashed Potatoes

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY VEGETABLES*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Mustard Greens Brussels Sprouts Cauliflower Beets	Zucchini Squash Egg Plant Succotash Rutabagas Turnip Parsnips	Yellow Squash
	MODERATE	Wax Beans Cooked Onions Turnips Greens Okra	Green Beans Lima Beans Asparagus Canned Peas Canned Green Beans Peas Broccoli Spinach Cabbage	Carrots Peas & Carrots Canned Tomatoes Stewed Tomatoes Blackeyed Peas French Fried Onion Rings Sauerkraut
	HIGH		Creamed Style Corn Corn Sliced Tomatoes	Mixed Vegetables Corn-on-cob

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY SALADS*

HEDONIC SCALE

	LOW	MODERATE	HIGH
LOW	Cucumber & Onion Pineapple Cheese Salad Pickled Beef/Onion Carrot, Raisin, & Celery Frijole Salad Cabbage & Sweet Pepper Kidney Bean Pickled Green Beans		
MODERATE	Carrot Salad Cucumber, Onion, & Sw. Pepper	Banana Salad Assorted Fruit Salad Cottage Ch. & Fr. Salad Mixed Fruit Salad Waldorf Salad Cold Slaw Tossed Cucumber & Tomato Garden Cottage Cheese Vegetable Slaw Potato Salad Macaroni Salad Chef's Salad	
HIGH		Jellied Fruit Salad Lettuce & Tomato Salad Tossed Vegetable Salad Lettuce Salad	Tossed Greens

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR MID-DAY FRUITS

HEDONIC SCALE

LOW

MODERATE

HIGH

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LOW	Canned Figs Canned Prunes	Canned Grapefruit Canned Plums	
MODERATE		Canned Sweet Cherries Fresh Plums Honeydew Melon Canned Pineapple Canned Apples Grapes Canned Apricots Canned Peaches Canned Pears	Cantaloupe Applesauce Fruit Cocktail Bananas Oranges Fresh Peaches Tangerines
HIGH			Fresh Apples Fresh Pears Watermelon

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY SOUPS*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Corn Chowder Pea Soup Onion Soup Cheese Soup Knickerbocker Soup Pepper Pot Soup	Mulligatawny Soup Creole Soup Fish Chowder Minestrone Soup	
	MODERATE	Manhattan Clam Chowder Potato Soup Beef Barley Soup Cream of Mushroom Soup	Bean Soup Tomato Vegetable/Noodle Soup Tomato Soup Turkey Noodle Soup Beef Rice Soup Vegetable Soup Turkey Rice Soup	
	HIGH			

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR MID-DAY DESSERTS

HEDONIC SCALE

	LOW	MODERATE			HIGH
Low	Mincemeat Pie Raisin Pie	Apricot Pie Coconut Raisin Cookies Ginger Molasses Cookies	Pineapple Sauce Crisp Toffee Bars Peanut Butter Cake		
Moderate	Butterscotch Sundae	Leomon Chiffon Pie Blackberry Pie Pineapple Chiffon Pie Boston Cream Pie Banana Cream Pie Boysenberry Pie Pineapple Pie Straw. Chiffon Pie Coconut Cream Pie Pineapple Cream Pie Pumpkin Pie Butter. Cream Pie Blueberry Pie Lemon Meringue Pie Sherbet Apricot Crisp Peach Crisp Brownies Gingerbread Apple Crisp Butter Brownies Cherry Crisp	Straw. Gelatin Applesauce, Instant Fruit Cocktail Sugar Cookies Hermits Molasses Cookies Lemon Cookies Vanilla Wafers Fruit Bars Raisin Drop Cookies Peanut Butter Cookies Coconut Drop Cookies Butternut Ref. Cookies Chewy Nut Bars Choco. Drop Cookies Bread Pudding Cherry Cake Pudding Coconut Cream Pudding Vanilla Cream Pudding Choco. Chip Bread Pud. Banana Cream Pudding Choco. Coconut Pudding	Choco. Cream Cake Fruitcake Devil's Food Cake Banana Cake Pineapple Upsd/dn cake Peach Shortcake Lemon Pudding Sauce Hot Fudge Sauce Vanilla Pudding S. Custard Pudding S. Leomon Cake Pudding Chocolate Pudding Butterscotch Pudding Applesauce Cake Spice Cake Marble Cake White Cake Raspberry Shortcake Yellow Cake Cherry Pie	Apple Pie
High		Chocolate Chip Cookies			Ice Cream Ice Cream Sundae Banana Split Soft Serve Ice Crm. Milk Shake Strawberry shortcake

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *MID-DAY ACCESSORY*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Pickled Green Beans Raisin Stuffing Oyster Stuffing	Tomato Juice Savory Bread Stuffing Sausage Stuffing	
	MODERATE	American Cheese Chopped Onions Stuffed Celery/Peanut Butter Sour Cream Salad Dressing	Cottage Cheese Swiss Cheese Shrimp Cocktail Orange & Pineapple Juice Fruit Cup Mixed Sweet Pickles Cranberry Sauce Sweet Pickles Green Olives Dill Pickles Sweet Pickle Relish Ripe Olives Stuffed Celery/Cheese	Applesauce Mixed Nuts Cornbread Stuffing Apple Stuffing Russian Salad Dressing Blue Cheese Salad Dressing Mayonnaise Salad Dressing Caesar Salad Dressing Garlic French Salad Dressing Giblet Stuffing
	HIGH		Carrot Sticks Celery Sticks Thousand Island Dressing French Salad Dressing	Vinegar & Oil Salad Dressing Creamy French Salad Dressing Italian Salad Dressing

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR EVENING MAIN DISHES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Low	A. Sardines D. Liverwurst	D. Cervelat (c.c.)	
Moderate	A. Fried Oysters C. Beef Liver	A. Fish Shrimp Creole Breaded Shrimp Tuna Salad Seafood Platter Baked Tuna & Noodles Lobster Newburg Salmon B. Baked Macaroni & Cheese Lasagna C. Lamb Roast Polish Sausage Lamb Chops Veal Roast Spare Ribs & Sauerkraut Corned Beef BBQ Beef Cubes Veal Parmesan C. Veal Burger Breaded Veal Steaks Baked Stuffed Pork St. Swedish Meat Balls Pepper Steak Italian Sausage Chili Con Carne Chili Con Carne/Beans D. Bologna (c.c.) Frankfurter Salami (c.c.) Sloppy Joe** Turkey Club Sandwich Submarine Sandwich Luncheon Meat (c.c.) Ham (c.c.) Chicken Club Sandwich Turkey (c.c.) Meatball Submarine D. Tacos Western Sandwich Shredded Beef w/BBQ S. Hot Tamales	B. Pizza Spaghetti Ravioli Chili Macaroni C. Ham (canned) St. Roast Pork w/Gvy. Roast Pork Ham Pot Roast BBQ Spare Ribs Meat Loaf Cheeseburger Gr. Chse/Ham Sand. Hot Roast Bf. Sand. BLT Sandwich Hot Turkey Sand. /Gravy Grilled Cheese Turkey
High		A. Lobster	C. Roast Beef Swiss Steak Grilled Steak Salisbury Steak Fried Chicken Chicken Turkey St/gr. D. Hamburger Pizza

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING CASSEROLES & COMBINATION DISHES*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	LOW		MODERATE	
	LOW	Sauerbraten Sukiyaki	Scalloped Tuna & Peas	
	MODERATE	Stuffed Cabbage	Beef Stroganoff Chicken Cacciatore Chop Suey Stuffed Green Peppers Chow Mein Chicken A La King Corned Beef Hash Beef Stew (Canned) Creamed Chip Beef*** Hungarian Goulash	Beef Pot Pie El Rancho Stew Turkey Pot Pie Sweet & Sour Pork Veal Scallopini*** Baked Tuna & Noodles Shrimp Creole Lobster Newburg Chicken Tetrizini
	HIGH			

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING BEVERAGES*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	HEDONIC SCALE			
	LOW	MODERATE		HIGH
	LOW			
	MODERATE	Freeze Dried Coffee Iced Coffee	Instant Coffee Grape Lemonade Grapeade Orangeade Limeade Lemon-Lime Soda Gingerale	Grape Soda Cherry Soda Imitation Cherry Imitation Orange Imitation Lemon Imitation Lime Imitation Grape
HIGH			Tea Fresh Coffee Ice Tea** Fruit Punch	Orange Soda Cola Beer Lemonade Milk Chocolate Milk Milk Shakes

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING BREADS & CEREALS*

HEDONIC SCALE

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	LOW	MODERATE	HIGH
LOW		Date Nut Bread	Toast
MODERATE		English Muffins Raisin Bread Corn Bread Rye Bread Cake Muffins	Sweet Rolls
HIGH		Hot Cross Buns Whole Wheat Bread	Biscuits White Bread French Bread Hot Rolls & Buns

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING POTATOES & STARCHES*

HEDONIC SCALE

F R E Q U E N C Y S C A L E	HEDONIC SCALE		
	LOW	MODERATE	HIGH
	LOW	Rice Pilaff	
	MODERATE	Scalloped Potatoes Sweet Potatoes Mashed Potatoes, Instant Baked Potatoes Potato Salad Noodles Lasagna Macaroni Salad Ravioli Chili Macaroni	Boston Baked Beans Beans/Pork in Tomato Sauce Rice Fried Rice Spanish Rice Fritters
			Potato Chips Hashed Brown Potatoes Spaghetti
			French Fried Potatoes Mashed Potatoes

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING VEGETABLES*

HEDONIC SCALE				
		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Mustard Greens Zucchini Squash Egg Plant	Rutabagas Turnip Parsnips Succotash	
		Brussels Sprouts Okra*** Waxed Beans Cooked Onions Cauliflower Beets Turnip Greens	Lima Beans Asparagus Canned Peas Canned Green Beans Peas Broccoli Spinach Cabbage Carrots Yellow Squash** Peas & Carrots Radishes Canned Tomatoes Stewed Tomatoes	Black-Eyed Peas French Fried Onion Rings Sauerkraut
	MODERATE			
	HIGH		Green Beans Creamed Style Corn Corn, Sliced Tomatoes	Mixed Vegetables Corn-on-Cob

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING SALADS*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Cabbage & Sweet Pepper Salad Pineapple Cheese Salad Carrot Salad Kidney Bean Salad Carrot, Raisin, & Celery Salad Frijole Salad Pickled Green Beans Salad Pickled Beet & Onion Salad		
	MODERATE	Waldorf Salad Cucumber, Onion, Sweet Pepper S. Cucumber & Onion Salad	Banana Salad Assorted Fruit Salad Cottage Cheese & Fruit Salad Mixed Fruit Salad Cole Slaw Tossed Cucumber & Tomato Salad Garden Cottage Cheese Salad Vegetable Slaw Potato Salad Macaroni Salad Chef's Salad	
	HIGH		Lettuce Salad Jellied Fruit Salad Lettuce & Tomato Salad Tossed Vegetable Salad	Tossed Green Salad

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING FRUITS*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Canned Figs Canned Prunes	Canned Plums Canned Apricots Canned Grapefruit	
	MODERATE		Canned Sweet Cherries Fresh Plums Honeydew Melon Canned Pineapple Canned Apples Grapes Canned Peaches Canned Pears Cantaloupe Applesauce Fruit Cocktail	Bananas Oranges Fresh Apples Fresh Pears Fresh Peaches Tangerines
	HIGH			Watermelon

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING SOUPS*

HEDONIC SCALE

		LOW	MODERATE	HIGH
F R E Q U E N C Y S C A L E	LOW	Pea Soup Corn Chowder Onion Soup Cheese Soup Knickerbocker Soup	Pepper Pot Soup Mulligatawny Soup Creole Soup Fish Chowder	Minestrone Soup Beef Rice Soup
	MODERATE	Manhattan Clam Chowder Cream of Potato Soup Beef Barley Soup Cream of Mushroom Soup	Bean Soup Tomato Vegetable/Noodle Soup Tomato Soup Turkey Rice Soup Turkey Noodle Soup Vegetable Soup Chicken Noodle Soup Beef Noodle Soup	
	HIGH			

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING DESSERTS*

HEDONIC SCALE

	LOW	MODERATE			HIGH
Low	Molasses Cookies Raisin Pie Mincemeat Pie***	Coconut Raisin Cookies Butternut Refrigerator Ginger Molasses Chewy Nut Bars	Crisp Toffee Bars Choco. Chip Bread Peanut Butter Cake Custard Pudding Sauce	Pineapple Sauce Apricot Pie Raisin Drop Cookies	
MODERATE		Sugar Cookies Hermits Lemon Cookies Vanilla Wafers Fruit Bars Peanut Butter Cookies Coconut Drop Cookies Choc. Drop Cookies Oatmeal Cookies Bread Pudding Cherry Cake Pudding Choc. Cream Pudding Vanilla Cream Pudding Lemon Cake Pudding Chocolate Pudding Butterscotch Pudding Banana Cream Pudding Choc. Coconut Pudding Applesauce Cake Fruit Cake Spice Cake	Devil's Food Cake Marble Cake Banana Cake White Cake Pineapple Upsd/Cake Raspberry Shortcake Peach Shortcake Yellow Cake Lemon Pudding Sauce Vanilla Pudding Sauce Hot Fudge Sauce Butterscotch Sauce Lemon Chiffon Pie Blackberry Pie Pineapple Chiffon Pie Boston Cream Pie Banana Cream Pie Boysenberry Pie Pineapple Pie Strawberry Chiffon Pie Coconut Cream Pie Peach Pie Blueberry Pie	Chocolate Cream Pie Pineapple Cream Pie Pumpkin Pie Butterscotch Cream Pie Lemon Meringue Pie Sherbet Apricot Crisp Peach Crisp Brownies Ginger Bread Apple Crisp Butterscotch Brownies Cherry Crisp Strawberry Gelatin Applesauce, Instant Fruit Cocktail	
HIGH		Chocolate Chip Chocolate Cream Cake Cherry Pie		Strawberry Shortcake Apple Pie Ice Cream Ice Cream Sundae Banana Split Soft Serve Ice Cream Milk Shake	

RELATIONSHIP BETWEEN PREFERENCE SCALES FOR *EVENING ACCESSORY FOODS*

HEDONIC SCALE

		LOW	MODERATE		HIGH
F R E Q U E N C Y S C A L E	LOW	Pickled Green Beans Raisin Stuffing Oyster Stuffing	Tomato Juice Savory Bread Stuffing Sausage Stuffing	Sour Cream Salad Dressing	
	MODERATE		Ripe Black Olives Cottage Cheese American Cheese Swiss Cheese Shrimp Cocktail Orange & Pineapple Juice Fruit Cup Mixed Sweet Pickles Cranberry Sauce Chopped Onions Sweet Pickles Green Olives Dill Pickles Sweet Pickle Relish	Stuffed Celery/Cheese Stuffed Celery/Peanut But. Celery Sticks Applesauce Apple Stuffing Mixed Nuts Giblet Stuffing Russian Salad Dressing Corn Bread Stuffing Blue Cheese Salad Dressing Mayonnaise Salad Dressing Garlic French Dressing	
	HIGH		Carrot Sticks Thousand Island Dressing French Salad Dressing Vinegar & Oil Dressing Creamy French Salad Dressing	Italian Salad Dressing Caesar Salad Dressing	

APPENDIX C

OVERSERVING AND UNDERSERVING

Appendix C illustrates the relationship between underserving/overserving and hedonic rating of food item by subclass for each meal.

The ranges for the hedonic ratings are determined in the same manner as in Appendix B. A food is classified underserved or overserved depending on whether its adjusted preference rating per 42 day cycle is higher or lower than the actual servings on the March 1971 Armed Forces 42-Day Menu. Following each food item in parantheses are the actual servings per 42 day cycle and the per cent underserved/overserved. Thus for breakfast juices, orange juice is an underserved item of high hedonic rating. It was served in the March 1971 menu 15 times which is 10% less than the frequency desired (16.5).

UNDERSERVING/OVERSERVING: BREAKFAST JUICES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Grapefruit & pineapple juice (2, 94%) Grapefruit & orange juice (3, 36%) Grape juice (3, 28%)	Orange juice (15, 10%)
Overserved		Grapefruit juice (4, 14%) Pineapple juice (5, 27%) Tomato juice (7, 48%)	

UNDERSERVING/OVERSERVING: BREAKFAST BAKED ITEMS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Blueberry muffins (1, 149%) Doughnuts (3, 88%) Cake muffins (1, 44%)	
Overserved		Raisin Bread (4, 36%) Coffee cake (6, 52%)	

UNDERSERVING/OVERSERVING: BREAKFAST CEREAL

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Hot whole wheat cereal (1, 95%)	Oatmeal (2, 15%)	
Overserved	Farina (1, 8%) Hominy grits (2, 59%)		

UNDERSERVING/OVERSERVING: BREAKFAST FRUITS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Canned pineapple (1, 358%) Fresh peaches (3, 87%) Applesauce (2, 39%) Fresh plums (3, 19%) Bananas (8, 14%)	
Overserved	Canned plums (2, 23%) Canned prunes (3, 51%)	Honeydew melon (3, 10%) Cantaloupe (4, 15%) Canned apricots (2, 29%) Canned grapefruit (9, 58%)	

UNDERSERVING/OVERSERVING: BREAKFAST MEATS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Ham (6, 137%) Pork sausage links (12, 35%)	
Overserved		Bacon (42, 29%)	

UNDERSERVING/OVERSERVING: MIDDAY-CONDIMENTS

HEDONIC SCALE

LOW

MODERATE

HIGH

Underserved

Sweet pickles (1, 114%)
Sweet pickle relish (1, 86%)
Stuffed celery w/cheese (1, 68%)
Dill pickles (2, 63%)
Mixed sweet pickles (2, 37%)
Carrot sticks (3, 28%)
Celery sticks (3, 19%)

Overserved

Green olives (3, 19%)
Ripe black olives (3, 20%)
Applesauce (4, 37%)
Cranberry sauce (5, 69%)

UNDERSERVING/OVERSERVING: MIDDAY-SALAD DRESSINGS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Russian Salad Dressing (1, 275%) Thousand Island Salad Dressing (5, 49%) Garlic French Salad Dressing (2, 40%) Vinegar & Oil Dressing (4, 16%)	
Overserved		French Salad Dressing (14, 47%)	

UNDERSERVING/OVERSERVING: MIDDAY-BEVERAGES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Fruit punch (1, 897%) Grape lemonade (1, 610%) Limeade (1, 561%) Grapeade (1, 397%) Pineapple juice (1, 123%) Orangeade (3, 117%)	Lemonade (5, 137%)
Overserved		Tea (hot & iced) (30, 5%) Fresh coffee (25, 48%)	Milk (41, 31%)

UNDERSERVING/OVERSERVING: MIDDAY-BREADS, ETC.

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved			Hot rolls & buns (3, 126%) Biscuits (2, 60%)
Overserved		Cornbread (3, 25%)	Assorted breads (25, 17%)

UNDERSERVING/OVERSERVING: MIDDAY-SOUPS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Chicken noodle soup (1, 78%) Vegetable soup (1, 45%) Tomato vegetable with noodle soup (1, 35%) Tomato soup (1, 16%)	
Overserved	Beef barley soup (1, 8%) Pea soup (1, 40%) Knickerbocker soup (1, 64%)	Bean soup (1, 20%) Minestrone soup (1, 42%)	

UNDERSERVING/OVERSERVING: MIDDAY-SALADS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Waldorf salad (1, 72%) Pineapple cheese salad (1, 31%) Carrot, raisin, celery salad (1, 30%) Kidney bean salad (1, 12%) Cabbage & sweet pepper salad (1, 2%)	Lettuce & tomato salad (3, 262%) Jellied fruit salad (4, 46%) Tossed vegetable salad (5, 25%) Mixed fruit salad (4, 12%)	Tossed green salad (8, 29%)
Overserved	Pickled beet w/onion salad (3, 64%) Cucumber & onion salad (5, 69%)	Lettuce salad (9,9%) Jellied banana salad (3, 17%) Cole slaw (6, 25%) Chef's salad (6, 26%) Carrot salad (3, 46%) Garden cottage cheese salad (6, 68%)	

UNDERSERVING/OVERSERVING: MIDDAY-MAIN DISHES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Chili, con carne (1, 116%) Beef pot pie (1, 75%) Veal roast (1, 68%) Veal parmesan (1, 21%) Chop suey (1, 15%) Baked macaroni & cheese (2, 14%) Breaded veal steaks (2, 12%) Luncheon meat (2, 9%)	Grilled cheese & ham (2, 268%) Swiss steak (1, 214%) Meat loaf (2, 155%) Pot roast (1, 117%) Grilled steak (3, 49%) Roast beef (3, 9%)
Overserved	Beef liver (1, 8%)	Western sandwich (2, 0%) Seafood platter (2, 1%) Sweet & sour pork (1, 11%) Veal burger (2, 13%) Corned beef (2, 35%) Fish (3, 36%) Baked stuffed pork slices (2, 37%) Submarine sandwich (6, 58%) Fish sandwich (8, 72%) Hard cooked eggs (3, 75%)	Turkey (3, 10%) Grilled cheese sandwich (4, 18%) Chicken (5, 28%) Bacon, lettuce & tomato sandwich (6, 32%) Pizza (4, 35%) Ham (5, 54%)

UNDERSERVING/OVERSERVING: MIDDAY-DESSERTS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		<p>Cherry pie (1, 142%) Sugar cookies (1, 108%) Devil's food cake (1, 82%) Apple crisp (1, 78%) Peanut butter cookies (1, 60%) Strawberry chiffon pie (1, 59%) Chocolate chip cookies (2, 58%) Vanilla wafers (1, 48%) Peach shortcake (1, 37%) Pineapple upside down cake (1, 35%) Blueberry pie (1, 33%) Cherry cake pudding (1, 32%) Peach crisp (1, 31%) Cherry crisp (1, 29%) Marble cake (1, 14%) Raspberry shortcake (1, 9%) Brownies (2, 8%)</p>	<p>Strawberry shortcake (2, 74%) Apple pie (2, 29%) Ice cream sundae (3, 4%)</p>
Overserved		<p>Spice cake (1, 11%) Fruit bars (1, 16%) Bread pudding (1, 16%) Pineapple chiffon pie (1, 16%) Chocolate cream pie (2, 16%) Molasses cookies (1, 17%) White cake (2, 24%) Strawberry gelatin (2, 24%) Crisp toffee bars (1, 31%) Peanut butter cake (1, 34%) Sherbet (4, 41%) Lemon cake pudding (2, 50%) Butterscotch brownies (2, 60%) Refrigerator (butternut) cookies (3, 73%)</p>	<p>Ice cream (7, 40%)</p>

UNDERSERVING/OVERSERVING: MIDDAY-POTATOES & OTHER STARCHES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Spanish rice (1, 151%) Noodles (1, 120%) Fried rice (1, 106%) Lasagna (1, 96%) Boston baked beans (2, 88%) Steamed rice (2, 62%)	French fried potatoes (3, 167%) Hash brown potatoes (1, 151%)
Overserved		Sweet potatoes (2, 11%) Scalloped potatoes (4, 43%) Baked potatoes (6, 49%) Mashed potatoes (11, 77%)	

UNDERSERVING/OVERSERVING: MIDDAY-VEGETABLES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Wax beans (1, 135%) Cauliflower (1, 61%)	Peas and carrots (2, 134%) Cream style corn (3, 127%) Canned peas (2, 117%) Sauerkraut (1, 113%) French fried onion rings (3, 102%) Stewed potatoes (1, 101%) Blackeyed peas (2, 19%) Carrots (4, 16%) Green beans (6, 7%)	Corn on the cob (2, 230%) Canned corn (5, 40%)
Overserved	Cooked onions (2, 2%) Brussels sprouts (2, 22%) Mustard greens (2, 37%) Beets (5, 64%) Succotash (5, 75%)	Mixed vegetables (8, 7%) Fresh peas (5, 20%) Cabbage (3, 29%) Spinach (4, 39%) Lima beans (4, 40%) Asparagus (4, 44%) Canned green beans (9, 54%) Broccoli (6, 62%)	

UNDERSERVING/OVERSERVING: EVENING-CONDIMENTS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Mixed sweet pickles (1, 55%) Green olives (1, 53%) Ripe black olives (1, 51%) Cranberry sauce (1, 37%) Celery sticks (2, 3%)	
Overserved	Chopped onions (1, 7%)	Dill pickles (2, 0%) Sweet pickle relish (1, 17%) Sweet pickles (1, 38%) Applesauce (3, 41%)	

UNDERSERVING/OVERSERVING: EVENING-SALAD DRESSINGS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Garlic french salad dressing (1, 327%) Thousand island salad dressing (3, 260%) Russian salad dressing (4, 42%)	
Overserved		French salad dressing (19, 42%) Vinegar & oil salad dressing (11, 43%)	

UNDERSERVING/OVERSERVING: EVENING-BEVERAGES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Limeade (2, 139%) Grape lemonade (2, 125%) Grapeade (2, 86%) Fruit punch (5, 68%) Orangeade (3, 31%) Tea (hot & iced) (22, 19%)	Lemonade (5, 43%)
Overserved		Fresh coffee (18, 24%)	Milk (42, 31%)

UNDERSERVING/OVERSERVING: EVENING-BREADS

HEDONIC SCALE

LOW	MODERATE	HIGH
Underserved	Corn bread (1, 186%)	Hot rolls & buns (1, 874%) French bread (1, 298%)
Overserved		Biscuits (11, 60%) Assorted breads (11, 60%)

UNDERSERVING/OVERSERVING: EVENING-DESSERTS

HEDONIC SCALE

LOW

MODERATE

HIGH

Underserved

Yellow cake (1, 203%)
Lemon chiffon pie (1, 157%)
Chocolate cream pie (1, 96%)
Cherry cake pudding (1, 79%)
Banana cake (1, 74%)
Strawberry chiffon pie (1, 62%)
Marble cake (1, 60%)
Cherry pie (2, 60%)
Chocolate drop cookies (1, 56%)
Pineapple upside down cake
(1, 44%)
Applesauce cake (1, 29%)
Boysenberry pie (1, 23%)
Devil's food cake (2, 14%)
Fresh plums (1, 11%)
Sugar cookies (2, 5%)
Canned apricots (2, 1%)

Apple pie (2, 53%)
Watermelon (2, 48%)
Fresh pears (2, 43%)
Fresh peaches (2, 28%)

Overserved

Butterscotch brownies (1, 5%)
Apple crisp (2, 6%)
Sherbet (3, 11%)
Hermits (cookies) (2, 20%)
Fruit bars (1, 20%)
Coconut drop cookies (1, 20%)
Raisin drop cookies (1, 24%)
Apricot pie (1, 27%)
Sweet cherries (2, 28%)
Peanut butter cookies (2, 31%)
Cherry crisp (2, 32%)
Coconut raisin drop cookies
(1, 34%)
Strawberry gelatine (2, 40%)
Crisp toffee bars (1, 46%)
Apricot crisp (2, 47%)
Oatmeal cookies (3, 56%)
Butternut refrigerator cookies
(2, 64%)

Ice cream (8, 32%)
Ice cream sundae (6, 37%)

UNDERSERVING/OVERSERVING: EVENING-MAIN DISHES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Veal roast (1, 80%) Beef stew (1, 46%) Salmon (1, 24%) Chili con carne (1, 11%) Chop suey (1, 11%) Submarine sandwich (1, 0%)	Grilled steak (1, 337%) Roast beef (1, 201%) Pot roast (1, 113%) Pork roast (1, 160%) Cheeseburger (1, 96%) Swiss steak (2, 62%) Chicken (2, 56%) Salisbury steak (2, 28%)
Overserved	Beef liver (1, 5%)	Corned beef (1, 2%) Baked tuna & noodles (1, 7%) El rancho stew (1, 18%) Turkey pot pie (2, 38%) Barbecue beef cubes (2, 42%) Luncheon meat (cold cuts) (4, 81%) Frankfurter (w/sauerkraut) (8, 88%)	Ham (4, 1%) Hot turkey sandwich w/gravy (3, 40%) Spaghetti (4, 41%)

UNDERSERVING/OVERSERVING: EVENING POTATOES RICE

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved		Scalloped potatoes (1, 97%) Sweet potatoes (1, 90%) Boston baked beans (1, 83%) Baked potatoes (2, 75%) Noodles (1, 71%) Rice (2, 48%) Lasagna (1, 24%)	Potato chips (2, 45%)
Overserved		Mashed potatoes (instant) (8, 71%)	French fried potatoes (5, 10%) Hash brown potatoes (4, 47%)

UNDERSERVING/OVERSERVING: EVENING-SALADS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Cucumber & onion salad (1, 32%) Pickled beet w/onion salad (1, 19%)	Lettuce & tomato salad (2, 44%) Potato salad (2, 83%) Jellied fruit salad (3, 65%)	Tossed green salad (4, 163%)
Overserved	Waldorf salad (2, 35%) Kidney bean salad (2, 57%) Cabbage & sweet pepper salad (2, 73%) Pineapple cheese salad (4, 74%)	Jellied banana salad (2, 10%) Tossed vegetable salad (7, 16%) Cole slaw (5, 30%) Chef's salad (6, 36%) Mixed fruit salad (5, 37%) Garden cottage cheese salad (2, 38%) Lettuce salad (13, 44%)	

UNDERSERVING/OVERSERVING: EVENING-SOUPS

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Manhattan clam chowder (1, 9%)	Vegetable soup (1, 53%) Turkey noodle soup (1, 52%) Beef noodle soup (1, 39%)	
Overserved	Beef barley soup (2, 27%) Onion soup (1, 42%)	Turkey rice soup (1, 7%) Beef rice soup (1, 21%) Minestrone (1, 31%)	

UNDERSERVING/OVERSERVING: EVENING-VEGETABLES

HEDONIC SCALE

	LOW	MODERATE	HIGH
Underserved	Beets (1, 83%) Mustard greens (1, 8%) Wax beans (2, 5%)	(Yellow) peas & carrots (1, 386%) French fried onion rings (1, 364%) Mixed vegetables (4, 98%) Green beans (4, 79%) Canned green beans (3, 27%)	Canned corn (2, 222%) Corn on the cob (4, 90%)
Overserved	Succotash (1, 11%) Brussels sprouts (2, 22%) Cauliflower (4, 53%)	Cabbage (2, 4%) Canned peas (4, 8%) Broccoli (3, 34%) Peas (7, 38%) Sauerkraut (3, 40%) Spinach (4, 48%) Lima beans (5, 52%) Asparagus (4, 55%) Stewed tomatoes (4, 58%) Carrots (11, 70%)	

APPENDIX D

CORRELATION BETWEEN PREFERENCE SCALES

In order to determine how the hedonic ratings and frequency ratings of foods vary, the product moment correlation coefficient (r) between hedonic preference and breakfast, midday, evening, and total frequency was calculated across all subjects for each food. Also the correlations for food subclasses and for the total list of foods were computed. The correlation coefficients are presented on the following pages by food subclass and by meal.

In general the correlations were low to moderate, falling in the range 0.0 to 0.6. The highest correlation for a food item was that for fresh coffee with $r = 0.61$ for breakfast frequency versus hedonic preference and 0.57 for total frequency versus hedonic rating. Only 36% of the variation in the preference frequency of fresh coffee is explained by the variation in the hedonic rating. For most foods a much less percentage of the variation of the frequency rating is explained by the variation in hedonic rating. Overall only about ten per cent of the variation is explained as is seen from the correlation coefficients of 0.22, 0.34, 0.32, and 0.39 for breakfast, midday, evening, and total frequency respectively vs. hedonic rating.

The correlation depended quite heavily on food subclass. In general the coefficients of foods within a subclass would follow the trend in value exhibited by the subclass as a whole. If a subclass consists primarily of non-breakfast foods, the breakfast correlation is low while the midday, evening, and total correlations are higher. Conversely, a subclass consisting of breakfast items will have a moderate breakfast correlation and low midday and evening correlations. Foods which are consumed at all three meals will tend to have moderate correlations for breakfast, midday, evening, and total.

Correlation Coefficient $-(R)$ Between Frequency And Hedonic Ratings

			Breakfast	Midday	Evening	Total
CHEESE						
1	219	Cottage Cheese	0.08	0.50	0.45	0.51
2	335	American Cheese	-0.03	0.34	0.30	0.32
3	381	Swiss Cheese	0.11	0.38	0.30	0.38
		TOTAL	0.06	0.41	0.35	0.41
APPETIZERS						
1	145	Shrimp Cocktail	0.10	0.35	0.38	0.41
2	218	Orange & Pineapple Juice	0.48	0.20	0.18	0.43
3	253	Tomato Juice	0.51	0.21	0.18	0.48
4	260	Fruit Cup	0.16	0.35	0.35	0.38
		TOTAL	0.35	0.27	0.27	0.43
CONDIMENTS						
1	15	Mixed Sweet Pickles	0.01	0.37	0.32	0.38
2	62	Cranberry Sauce	0.11	0.36	0.34	0.35
3	127	Chopped Onions	0.04	0.44	0.37	0.48
4	140	Sweet Pickles	0.05	0.34	0.31	0.35
5	144	Green Olives	0.07	0.48	0.42	0.49
6	201	Dill Pickles	0.03	0.40	0.33	0.38
7	210	Sweet Pickles Relish	0.05	0.39	0.30	0.39
8	279	Ripe Black Olives	0.07	0.57	0.48	0.55
9	363	Stuffed Celery w/Cheese	0.09	0.38	0.36	0.39
10	397	Stuffed Celery w/Pnutbutter	0.10	0.32	0.32	0.32
11	66	Carrot Sticks	0.05	0.42	0.38	0.42
12	206	Celery Sticks	0.03	0.42	0.32	0.40
13	76	Applesauce	0.21	0.31	0.31	0.31
14	317	Mixed Nuts	0.01	0.25	0.31	0.31
15	327	Pickled Green Beans	0.08	0.26	0.21	0.29
		TOTAL	0.10	0.39	0.35	0.41

			Breakfast	Midday	Evening	Total
STUFFING						
1	337	Corn Bread Stuffing	0.04	0.24	0.13	0.20
2	342	Apple Stuffing	0.07	0.21	0.17	0.20
3	344	Giblet Stuffing	0.05	0.26	0.19	0.27
4	393	Raisin Stuffing	0.01	0.23	0.22	0.23
5	400	Savory Bread Stuffing	0.06	0.23	0.27	0.29
6	408	Sausage Stuffing	0.13	0.23	0.15	0.27
7	410	Oyster Stuffing	0.03	0.20	0.21	0.22
		TOTAL	0.07	0.23	0.19	0.24
SALAD DRESSING						
1	349	Thousand Island	0.04	0.50	0.46	0.51
2	358	French	0.00	0.50	0.48	0.51
3	368	Vinegar & Oil	0.07	0.46	0.43	0.48
4	379	Russian	0.08	0.46	0.43	0.46
5	385	Sour Cream	0.10	0.39	0.38	0.40
6	391	Blue Cheese	0.10	0.53	0.50	0.53
7	402	Mayonnaise	0.09	0.46	0.42	0.47
8	416	Creamy French	0.02	0.46	0.43	0.46
9	326	Italian	0.05	0.45	0.44	0.48
10	19	Cesar	0.07	0.36	0.36	0.38
11	412	Garlic French	0.06	0.37	0.37	0.38
		TOTAL	0.05	0.47	0.45	0.48
FRUIT AND VEGETABLE JUICES						
1	1	Orange Juice Instant	0.34	0.11	0.11	0.26
2	2	Grape Juice	0.36	0.14	0.08	0.28
3	106	Grapefruit & Pineapple	0.45	0.16	0.15	0.38
4	136	Pineapple Juice	0.44	0.18	0.15	0.38
5	203	Orange Juice	0.40	0.11	0.08	0.31
6	253	Tomato Juice	0.51	0.21	0.18	0.48
7	278	Grapefruit Juice	0.46	0.23	0.19	0.46
8	292	Grapefruit & Orange	0.47	0.20	0.18	0.43
9	218	Orange & Pineapple	0.48	0.20	0.18	0.43
10	276	Cranberry Juice	0.35	0.21	0.20	0.33
		TOTAL	0.48	0.18	0.15	0.42

			Breakfast	Midday	Evening	Total
HOT BEVERAGES						
1	57	Tea	0.33	0.48	0.47	0.51
2	167	Fresh Coffee	0.61	0.44	0.45	0.57
3	336	Hot Cocoa	0.38	0.15	0.12	0.34
4	243	Instant Coffee	0.43	0.33	0.31	0.42
5	133	Freeze-dried	0.57	0.40	0.38	0.54
		TOTAL	0.49	0.39	0.38	0.50
ICED COFFEE						
1	411	Iced Coffee	0.13	0.42	0.32	0.36
ICED TEA						
1	164	Iced Tea	0.09	0.53	0.47	0.51
FRUIT DRINKS						
1	67	Fruit Punch	0.19	0.29	0.28	0.33
2	89	Grape Lemonade	0.20	0.34	0.26	0.36
3	102	Lemonade	0.06	0.36	0.28	0.34
4	111	Grapeade	0.26	0.31	0.23	0.33
5	286	Orangeade	0.27	0.31	0.25	0.37
6	288	Limeade	0.22	0.40	0.36	0.42
		TOTAL	0.20	0.35	0.29	0.37
MILK PRODUCTS						
1	117	Eggnog	0.31	0.34	0.35	0.44
2	341	Milk	0.42	0.41	0.36	0.45
3	345	Chocolate Milk	0.48	0.50	0.45	0.54
4	48	Milk Shake	0.09	0.36	0.31	0.37
		TOTAL	0.44	0.53	0.49	0.54

			Breakfast	Midday	Evening	Total
CARBONATED BEVERAGES						
1	304	Cola	0.08	0.42	0.37	0.42
2	370	Orange Soda	0.17	0.42	0.39	0.43
3	52	Lemon-Lime Soda	0.19	0.35	0.30	0.36
4	268	Gingerale	0.13	0.45	0.39	0.44
5	331	Grape Soda	0.18	0.44	0.40	0.44
6	126	Cherry Soda	0.15	0.40	0.36	0.40
		TOTAL	0.16	0.44	0.40	0.44
BEER						
1	49	Beer	0.18	0.40	0.53	0.50
BEVERAGE BASES						
1	269	Imitation Cherry	0.12	0.42	0.31	0.39
2	101	Imitation Orange	0.27	0.36	0.36	0.43
3	122	Imitation Lemon	0.16	0.29	0.25	0.30
4	183	Imitation Lime	0.18	0.40	0.37	0.41
5	320	Imitation Grape	0.28	0.41	0.36	0.44
		TOTAL	0.21	0.38	0.33	0.40
MUFFINS						
1	224	Blueberry Muffins	0.20	0.18	0.19	0.31
2	321	Cake Muffins	0.26	0.17	0.20	0.33
3	380	English Muffins	0.37	0.21	0.20	0.40
		TOTAL	0.32	0.19	0.20	0.35
BREADS AND ROLLS						
1	3	Whole Wheat Bread	0.45	0.52	0.49	0.54
2	29	Toast	0.37	0.02	0.01	0.31
3	112	Raisin Bread	0.40	0.20	0.19	0.37
4	148	Cornbread	0.10	0.33	0.37	0.41

			Breakfast	Midday	Evening	Total
BREADS AND ROLLS (Cont'd)						
5	168	Rye Bread	0.28	0.45	0.44	0.48
6	202	White Bread	0.27	0.36	0.29	0.37
7	242	French Bread	0.10	0.27	0.29	0.30
8	347	Date Nut Bread	0.21	0.26	0.22	0.29
9	191	Hot Rolls & Buns	0.09	0.30	0.32	0.35
10	311	Biscuits	0.32	0.24	0.21	0.36
		TOTAL	0.31	0.33	0.33	0.41
BUNS, DOUGHNUTS, ETC.						
1	21	Hot Cross Buns	0.18	0.34	0.29	0.36
2	153	Coffee Cake	0.37	0.12	0.13	0.38
3	313	Doughnuts	0.34	0.12	0.11	0.35
4	390	Sweet Rolls	0.28	0.16	0.16	0.32
5	14	Danish Pastry	0.37	0.18	0.19	0.37
		TOTAL	0.32	0.21	0.20	0.36
BREAKFAST CEREALS						
1	55	Hominy Grits	0.50	0.25	0.28	0.50
2	79	Hot Whole Wheat	0.47	0.04	0.01	0.44
3	251	Farina	0.42	0.10	0.13	0.42
4	326	Oatmeal	0.43	0.14	0.12	0.47
		TOTAL	0.47	0.12	0.14	0.48
COOKIES						
1	17	Sugar Cookies	0.17	0.32	0.26	0.33
2	22	Hermit Cookies	0.04	0.22	0.17	0.20
3	56	Molasses Cookies	0.20	0.30	0.25	0.35
4	84	Lemon Cookies	0.09	0.27	0.18	0.26
5	87	Chocolate Chip Cookies	0.05	0.31	0.21	0.26
6	93	Vanilla Wafers	0.12	0.32	0.25	0.34
7	97	Coconut Raisin	0.12	0.31	0.27	0.34
8	100	Fruit Bars	0.05	0.27	0.25	0.29

			Breakfast	Midday	Evening	Total
COOKIES (Cont'd)						
9	128	Raisin Drop Cookies	0.07	0.27	0.18	0.24
10	161	Peanut Butter Cookies	0.09	0.37	0.27	0.35
11	169	Coconut Drop Cookies	0.11	0.17	0.19	0.22
12	194	Butternut Refrigerator	0.03	0.27	0.26	0.30
13	207	Ginger Molasses	0.10	0.32	0.26	0.32
14	208	Chew Nut Bars	0.11	0.26	0.28	0.32
15	247	Chocolate Drop	0.10	0.36	0.32	0.36
16	252	Crisp Toffee Bars	0.09	0.28	0.21	0.27
17	324	Oatmeal	0.06	0.34	0.31	0.36
		TOTAL	0.10	0.32	0.26	0.32
PUDDINGS						
1	36	Bread Pudding	0.11	0.34	0.36	0.40
2	50	Cherry Cake Pudding	0.12	0.33	0.29	0.35
3	75	Coconut Cream	0.04	0.30	0.28	0.30
4	99	Vanilla Cream	0.09	0.34	0.29	0.34
5	155	Chocolate Chip Bread	0.08	0.29	0.26	0.33
6	165	Lemon Cake Pudding	0.10	0.27	0.26	0.31
7	173	Chocolate Pudding	0.09	0.36	0.26	0.35
8	259	Butterscotch	0.06	0.30	0.35	0.38
9	291	Banana Cream	0.11	0.31	0.33	0.35
10	303	Chocolate Coconut	0.06	0.26	0.26	0.28
11	185	Chocolate Cake Pudding	0.08	0.37	0.36	0.38
		TOTAL	0.09	0.33	0.31	0.35
CAKES						
1	5	Chocolate Cream	0.08	0.28	0.29	0.28
2	9	Strawberry Shortcake	0.09	0.24	0.26	0.26
3	77	Applesauce	0.07	0.21	0.29	0.27
4	146	Fruitcake	0.13	0.29	0.20	0.28
5	163	Spice	0.06	0.30	0.29	0.33
6	187	Devil's Food	0.03	0.30	0.31	0.31

			Breakfast	Midday	Evening	Total
CAKES (Cont'd)						
7	196	Marble	0.09	0.28	0.35	0.33
8	197	Banana	0.07	0.28	0.29	0.29
9	214	White	0.04	0.29	0.27	0.30
10	229	Pineapple Upsidedown	0.05	0.31	0.32	0.34
11	230	Raspberry Short.	0.04	0.27	0.33	0.32
12	231	Peanut Butter	0.12	0.33	0.26	0.36
13	312	Peach Short.	0.06	0.31	0.28	0.34
14	115	Yellow	0.09	0.31	0.33	0.36
15	293	Yellow	0.12	0.37	0.39	0.44
		TOTAL	0.08	0.32	0.32	0.34
PIES						
1	11	Lemon Chiffon	0.05	0.26	0.31	0.29
2	47	Cherry	0.04	0.34	0.31	0.35
3	58	Mincemeat	0.11	0.28	0.32	0.35
4	83	Raisin	0.17	0.19	0.25	0.28
5	107	Blackberry	0.08	0.35	0.37	0.38
6	150	Pineapple Chiffon	0.08	0.32	0.32	0.35
7	162	Boston Cream	0.11	0.31	0.28	0.34
8	177	Banana Cream	0.04	0.32	0.31	0.33
9	181	Apple	0.09	0.33	0.30	0.35
10	182	Boysenberry	0.09	0.34	0.36	0.39
11	184	Pineapple	0.06	0.29	0.34	0.34
12	217	Strawberry Chiffon	0.08	0.30	0.26	0.32
13	227	Coconut Cream	0.07	0.32	0.31	0.34
14	232	Peach	0.06	0.32	0.32	0.35
15	239	Chocolate Cream	0.03	0.33	0.33	0.34
16	243	Apricot	0.06	0.31	0.28	0.35
17	250	Pineapple Cream	0.11	0.32	0.27	0.35
18	256	Pumpkin	0.08	0.35	0.34	0.38
19	285	Butterscotch Cream	0.11	0.31	0.30	0.34
20	302	Blueberry	0.05	0.32	0.34	0.34
21	308	Lemon Meringue	0.02	0.29	0.33	0.33
		TOTAL	0.08	0.34	0.34	0.37

			Breakfast	Midday	Evening	Total
SAUCES						
1	64	Lemon Pudding Sauce	0.09	0.26	0.24	0.28
2	137	Vanilla Pudding Sauce	0.08	0.30	0.28	0.33
3	319	Custard Pudding Sauce	0.10	0.34	0.27	0.35
4	228	Hot Fudge Sauce	0.04	0.39	0.38	0.42
5	4	Butterscotch Sauce	0.13	0.25	0.27	0.26
6	90	Butterscotch Sauce	0.13	0.29	0.29	0.35
7	193	Pineapple Sauce	0.10	0.20	0.20	0.23
		TOTAL	0.08	0.30	0.27	0.31
ICE CREAM						
1	166	Ice Cream	0.05	0.36	0.38	0.40
2	209	Sherbert	0.08	0.38	0.38	0.42
3	362	Ice Cream Sundae	0.05	0.35	0.32	0.36
4	373	Banana Split	0.08	0.28	0.28	0.30
5	334	Soft Serve Ice Cream	0.08	0.39	0.37	0.41
6	48	Milk Shake	0.09	0.36	0.31	0.37
		TOTAL	0.08	0.37	0.35	0.39
OTHER DESSERTS						
1	24	Apricot Crisp	0.23	0.35	0.34	0.40
2	69	Peach	0.01	0.26	0.29	0.28
3	108	Brownies	0.11	0.29	0.26	0.29
4	135	Gingerbread	0.07	0.28	0.23	0.26
5	138	Apple Crisp	0.14	0.34	0.29	0.34
6	192	Butterscotch Brownies	0.12	0.32	0.34	0.36
7	329	Cherry Crisp	0.10	0.33	0.32	0.36
8	254	Strawberry Gelatin	0.01	0.32	0.24	0.31
9	76	Applesauce	0.21	0.31	0.31	0.38
10	116	Fruit Cocktail (can)	0.16	0.26	0.24	0.30
		TOTAL	0.14	0.33	0.30	0.35

FRUITS			Breakfast	Midday	Evening	Total
1	10	Bananas	0.34	0.17	0.13	0.31
2	23	Oranges	0.35	0.18	0.15	0.33
3	141	Oranges	0.40	0.22	0.24	0.39
4	40	Apples (fresh)	0.27	0.24	0.19	0.32
5	46	Grapefruit (fresh)	0.53	0.13	0.13	0.48
6	61	Pears (fresh)	0.23	0.23	0.18	0.27
7	86	Plums (fresh)	0.41	0.22	0.24	0.40
8	96	Peaches (fresh)	0.27	0.20	0.17	0.29
9	98	Tangerines	0.40	0.25	0.20	0.39
10	109	Honeydew Melon	0.35	0.19	0.22	0.38
11	118	Pineapple (canned)	0.18	0.28	0.26	0.31
12	289	Pineapple (canned)	0.24	0.28	0.23	0.32
13	124	Plums (canned)	0.34	0.22	0.22	0.34
14	130	Watermelon	0.08	0.31	0.29	0.32
15	139	Grapes	0.25	0.26	0.23	0.33
16	34	Sweet Cherries (canned)	0.16	0.28	0.26	0.33
17	152	Apricots (canned)	0.28	0.29	0.27	0.36
18	198	Peaches (canned)	0.21	0.34	0.27	0.37
19	211	Pears (canned)	0.20	0.26	0.23	0.31
20	222	Figs (canned)	0.20	0.21	0.19	0.27
21	235	Grapefruit (canned)	0.40	0.13	0.14	0.38
22	264	Cantaloupe	0.33	0.22	0.20	0.36
23	323	Prunes (canned)	0.36	0.21	0.20	0.39
24	76	Applesauce	0.21	0.31	0.31	0.38
25	116	Fruit Cocktail (canned)	0.16	0.26	0.24	0.30
26	120	Apples (canned)	0.21	0.26	0.20	0.28
TOTAL			0.34	0.28	0.25	0.39

			Breakfast	Midday	Evening	Total
BREAKFAST MEATS						
1	74	Bacon	0.43	0.23	0.20	0.40
2	172	Sausage Links	0.49	0.04	0.03	0.46
3	88	Pork Sausage Patties	0.40	0.05	0.06	0.37
4	246	Ham	0.22	0.30	0.27	0.36
5	92	Ham	0.23	0.26	0.28	0.38
		TOTAL	0.34	0.16	0.15	0.40
EGGS						
1	176	Scrambled Eggs	0.44	0.06	0.11	0.43
2	271	Eggs to Order	0.49	0.02	0.05	0.48
3	273	Hard Cooked Eggs	0.39	0.17	0.13	0.44
4	348	Deviled Eggs	0.15	0.42	0.34	0.43
5	409	Omelet	0.47	0.07	0.08	0.44
6	415	Fried Eggs	0.47	0.02	0.01	0.43
		TOTAL	0.47	0.12	0.11	0.50
FISH AND SEAFOOD						
1	213	Fish Sticks	0.03	0.27	0.24	0.28
2	121	Fish	0.08	0.34	0.29	0.35
3	175	Shrimp Creole	0.01	0.26	0.33	0.35
4	241	Shrimp, Breaded	0.04	0.35	0.38	0.39
5	275	Tuna Salad	0.00	0.38	0.27	0.37
6	332	Seafood Platter	0.00	0.26	0.31	0.30
7	353	Sardines	0.10	0.32	0.29	0.33
8	354	Baked Tuna & Noodles	0.02	0.26	0.27	0.30
9	357	Lobster	0.10	0.35	0.45	0.42
10	384	Lobster Newburg	0.06	0.34	0.40	0.41
11	68	Salmon	0.06	0.32	0.32	0.34
12	71	Fried Oysters	0.13	0.40	0.40	0.44
13	343	Scalloped Tuna & Peas	0.01	0.29	0.26	0.30
		TOTAL	0.05	0.34	0.35	0.38

			Breakfast	Midday	Evening	Total
PASTA-MAIN DISH						
1	65	Baked Macaroni & Cheese	0.03	0.29	0.33	0.33
2	31	Pizza	0.09	0.27	0.29	0.30
3	72	Lasagna	0.06	0.33	0.37	0.38
4	160	Spaghetti	0.03	0.26	0.30	0.32
5	338	Ravioli	0.03	0.34	0.31	0.37
6	59	Chili Macaroni	0.05	0.26	0.25	0.27
		TOTAL	0.02	0.30	0.30	0.33
GRIDDLE CAKES, FRENCH TOAST						
1	125	Griddle Cakes	0.50	0.08	0.03	0.48
2	180	French Toast	0.49	0.02	0.02	0.47
		TOTAL	0.52	0.04	0.00	0.49
MEATS						
1	16	Lamb Roast	0.05	0.27	0.36	0.32
2	27	Polish Sausage	0.14	0.26	0.27	0.31
3	30	Lamb Chops	0.04	0.28	0.35	0.35
4	54	Roast Beef	0.10	0.31	0.30	0.33
5	85	Swiss Steak	0.06	0.27	0.30	0.30
6	92	Ham	0.23	0.26	0.28	0.38
7	246	Ham	0.22	0.30	0.27	0.36
8	157	Turkey	0.02	0.26	0.25	0.28
9	199	Pork Roast	0.04	0.19	0.24	0.25
10	200	Veal Roast	0.04	0.22	0.27	0.28
11	237	Spareribs w/Sauerkraut	0.06	0.27	0.30	0.32
12	143	Sliced Roast Pork w/Gravy	0.09	0.29	0.32	0.35
13	265	Pot Roast	0.05	0.21	0.24	0.25
14	301	Grilled Steak	0.10	0.17	0.25	0.24
15	307	Liver	0.05	0.37	0.45	0.47
16	322	Corned Beef	0.06	0.29	0.28	0.32
17	333	Chicken	0.04	0.22	0.26	0.23

			Breakfast	Midday	Evening	Total
MEATS (Cont'd)						
18	346	Barbecued Spareribs	0.07	0.24	0.30	0.28
19	350	Salisbury Steak	0.12	0.28	0.32	0.32
20	352	Fried Chicken	0.03	0.28	0.31	0.32
21	356	Barbecued Beef Cubes	0.06	0.17	0.16	0.19
22	364	Veal Parmesan	0.03	0.28	0.31	0.32
23	371	Vealburger	0.09	0.33	0.28	0.36
24	375	Breaded Veal Steaks	0.06	0.17	0.16	0.19
25	377	Baked Stuffed Pork SI	0.02	0.09	0.22	0.17
26	387	Swedish Meat Balls	0.03	0.28	0.25	0.32
27	399	Pepper Steak	0.05	0.28	0.26	0.29
28	221	Italian Sausage	0.18	0.25	0.24	0.33
29	223	Chili Con Carne	0.04	0.33	0.26	0.35
30	159	Chili Con Carne w/Beans	0.01	0.31	0.27	0.30
31	91	Turkey Slices w/Gravy	0.04	0.26	0.27	0.29
32	376	Meat Loaf	0.05	0.22	0.20	0.22
		TOTAL	0.09	0.29	0.32	0.34

SHORT ORDER, SANDWICHES

1	26	Bologna (Cold Cuts)	0.11	0.34	0.16	0.29
2	8	Hamburger	0.08	0.25	0.14	0.21
3	105	Cheeseburger	0.04	0.30	0.18	0.27
4	174	Frankfurters	0.06	0.35	0.23	0.34
5	38	Salami (Cold Cuts)	0.11	0.37	0.16	0.30
6	73	Sloppy Joe	0.02	0.36	0.21	0.33
7	94	Turkey Club Sandwich	0.09	0.30	0.20	0.29
8	154	Submarine Sandwich	0.06	0.36	0.21	0.33
9	226	Luncheon Meat (Cold Cuts)	0.05	0.40	0.25	0.41
10	263	Ham (Cold Cuts)	0.08	0.33	0.27	0.35
11	274	Chicken Club Sandwich	0.07	0.26	0.16	0.27
12	294	Turkey (Cold Cuts)	0.07	0.32	0.19	0.30

			Breakfast	Midday	Evening	Total
SHORT ORDER, SANDWICHES (Cont'd)						
13	310	Grilled Cheese & Ham	0.06	0.31	0.18	0.30
14	328	Meatball Sub.	0.02	0.26	0.20	0.23
15	386	Cervelat (Cold Cuts)	0.04	0.30	0.16	0.30
16	389	Hot Roast Beef Sand. w/Gravy	0.05	0.25	0.14	0.20
17	392	Bacon, Lettuce & Tomato Sand.	0.01	0.27	0.14	0.22
18	394	Hot Turkey Sand. w/ Gravy	0.05	0.34	0.26	0.34
19	406	Grilled Cheese	0.11	0.30	0.19	0.30
20	205	Tacos	0.02	0.35	0.29	0.32
21	299	Hot Tamales	0.14	0.38	0.35	0.38
22	31	Pizza	0.09	0.27	0.29	0.30
23	367	Liverwurst	0.08	0.27	0.19	0.26
24	369	Western Sandwich	0.08	0.29	0.18	0.28
25	266	Shredded Beef/Barbecue Sauce	0.00	0.24	0.23	0.27
26	414	Fish	0.02	0.35	0.28	0.36
		TOTAL	0.06	0.35	0.24	0.33
PASTA-SIDE DISH						
1	234	Noodles	0.03	0.27	0.25	0.26
2	72	Lasagna	0.06	0.33	0.37	0.38
3	114	Macaroni Salad	0.05	0.38	0.26	0.36
4	160	Spaghetti	0.03	0.26	0.30	0.32
5	338	Ravioli	0.03	0.26	0.22	0.28
6	59	Chili Macaroni	0.05	0.26	0.25	0.27
		TOTAL	0.05	0.29	0.31	0.33
CASSEROLES, STEWS, ETC.						
1	37	Stuffed Cabbage	0.06	0.35	0.35	0.39
2	44	Chicken Cacciatore	0.03	0.24	0.29	0.28
3	81	Chop Suey	0.01	0.26	0.34	0.35
4	82	Stuffed Green Peppers	0.01	0.34	0.34	0.39
5	110	Chow Mein	0.09	0.32	0.32	0.38
6	129	Chicken a la King	0.06	0.29	0.31	0.32

			Breakfast	Midday	Evening	Total
CASSEROLES, STEWS, ETC. (Cont'd)						
7	149	Corned Beef Hash	0.19	0.29	0.33	0.40
8	270	Beef Stew	0.02	0.26	0.24	0.28
9	325	Creamed Chipped Beef	0.26	0.24	0.14	0.36
10	351	Hungarian Goulash	0.06	0.30	0.34	0.35
11	355	Chicken Tetrazzini	0.02	0.20	0.20	0.23
12	395	Beef Stroganoff	0.02	0.21	0.24	0.26
13	398	Beef Pot Pie	0.04	0.35	0.30	0.37
14	401	Sauerbraten	0.05	0.24	0.13	0.27
15	405	El Rancho Stew	0.06	0.26	0.23	0.29
16	407	Turkey Pot Pie	0.02	0.32	0.28	0.34
17	318	Sweet & Sour Pork	0.08	0.24	0.29	0.29
18	283	Sukiyaki	0.01	0.25	0.24	0.27
19	361	Veal Scallopini	0.00	0.28	0.22	0.28
20	354	Baked Tuna & Noodles	0.02	0.26	0.27	0.30
21	343	Scalloped Tuna & Peas	0.01	0.29	0.26	0.30
22	175	Shrimp Creole	0.01	0.26	0.33	0.35
23	384	Lobster Newburg	0.06	0.34	0.40	0.41
		TOTAL	0.06	0.30	0.30	0.34
POTATOES						
1	131	French Fried	0.09	0.34	0.26	0.34
2	147	Scalloped Potatoes	0.11	0.35	0.33	0.40
3	158	Potato Chips	0.02	0.40	0.29	0.40
4	189	Sweet Potatoes	0.06	0.32	0.34	0.34
5	212	Instant Mashed Potatoes	0.05	0.36	0.36	0.40
6	220	Baked Potatoes	0.05	0.22	0.31	0.29
7	382	Hashed Brown Potatoes	0.35	0.19	0.19	0.39
8	32	Potato Salad	0.00	0.24	0.25	0.26
9	365	Mashed Potatoes	0.03	0.28	0.29	0.31
		TOTAL	0.14	0.35	0.31	0.40

			Breakfast	Midday	Evening	Total
BEANS						
1	404	Boston Baked	0.05	0.34	0.32	0.38
2	42	Beans w/Pork in Tom. Sauce	0.05	0.41	0.27	0.36
		TOTAL	0.04	0.37	0.29	0.37
RICE						
1	132	Rice	0.10	0.39	0.43	0.44
2	290	Fried Rice	0.12	0.38	0.38	0.41
3	360	Rice Pilaff	0.08	0.25	0.24	0.28
4	378	Spanish Rice	0.07	0.36	0.32	0.38
		TOTAL	0.10	0.37	0.37	0.41
FRITTERS						
1	374	Fritters	0.18	0.35	0.29	0.35
FRUIT SALADS						
1	33	Banana Salad	0.09	0.37	0.35	0.39
2	233	Fruit Salad (Ass't Fruit)	0.12	0.27	0.25	0.30
3	240	Pineapple Cheese Salad	0.04	0.28	0.24	0.29
4	287	Cottage Cheese & Fruit	0.13	0.41	0.34	0.41
5	296	Mixed Fruit Salad	0.02	0.24	0.23	0.25
6	7	Jellied Fruit Salad	0.12	0.39	0.33	0.37
7	282	Waldorf Salad (Apples, Celery & Raisin)	0.12	0.33	0.28	0.34
		TOTAL	0.11	0.35	0.30	0.35
SOUPS						
1	6	Manhattan Clam Chowder	0.03	0.35	0.25	0.30
2	12	Cream of Potatoe Soup	0.00	0.32	0.26	0.33
3	20	Beef Barley Soup	0.08	0.29	0.23	0.27
4	41	Pea Soup	0.06	0.36	0.27	0.34
5	51	Cream of Mushroom Soup	0.10	0.46	0.37	0.46
6	60	Bean Soup	0.06	0.34	0.29	0.34

			Breakfast	Midday	Evening	Total
SOUPS (Cont'd)						
7	104	Tom Veg w/Noodles	0.02	0.23	0.21	0.23
8	156	Tomato Soup	0.02	0.39	0.28	0.39
9	179	Turkey Rice Soup	0.09	0.33	0.18	0.31
10	190	Turkey Noodle Soup	0.06	0.27	0.15	0.24
11	195	Minestrone Soup	0.03	0.28	0.29	0.34
12	215	Beef Rice Soup	0.01	0.27	0.25	0.29
13	216	Corn Chowder	0.03	0.25	0.27	0.31
14	238	Vegetable Soup	0.03	0.26	0.22	0.28
15	257	Onion Soup	0.02	0.28	0.28	0.32
16	262	Cheese Soup	0.02	0.22	0.13	0.19
17	267	Chicken Noodle Soup	0.02	0.31	0.24	0.32
18	306	Beef Noodle Soup	0.07	0.31	0.22	0.33
19	339	Knickerbocker Soup	0.03	0.22	0.13	0.23
20	340	Pepper Pot Soup	0.02	0.19	0.10	0.10
21	383	Mulligatawny Soup	0.02	0.31	0.20	0.30
22	403	Creole Soup	0.01	0.30	0.26	0.30
23	413	Fish Chowder	0.09	0.25	0.18	0.27
		TOTAL	0.03	0.33	0.24	0.32
GREEN VEGETABLES						
1	18	Green Beans	0.08	0.31	0.32	0.34
2	123	Lima Beans	0.08	0.37	0.40	0.41
3	204	Asparagus	0.11	0.44	0.40	0.46
4	244	Peas (canned)	0.05	0.31	0.29	0.35
5	297	Green Beans (canned)	0.00	0.28	0.33	0.34
6	298	Peas	0.05	0.30	0.34	0.38
7	305	Broccoli	0.10	0.43	0.40	0.45
8	309	Spinach	0.11	0.34	0.32	0.36
9	316	Mustard Greens	0.02	0.29	0.21	0.30
10	225	Cabbage	0.07	0.32	0.32	0.36
11	258	Brussels Sprouts	0.01	0.36	0.36	0.38
12	366	Okra	0.06	0.38	0.39	0.43
		TOTAL	0.06	0.37	0.36	0.40

			Breakfast	Midday	Evening	Total
YELLOW VEGETABLES						
1	13	Creamed Style Corn	0.04	0.31	0.37	0.38
2	28	Wax Beans	0.07	0.35	0.36	0.37
3	70	Corn on the Cob	0.05	0.24	0.27	0.28
4	178	Corn (canned)	0.06	0.28	0.29	0.31
5	151	Carrots	0.02	0.32	0.30	0.33
6	113	Yellow Squash	0.13	0.34	0.34	0.35
		TOTAL	0.04	0.37	0.39	0.41
OTHER VEGETABLES						
1	35	Peas & Carrots	0.02	0.37	0.36	0.39
2	45	Radishes	0.08	0.45	0.43	0.48
3	63	Mixed Vegetables	0.01	0.37	0.38	0.40
4	80	Cooked Onions	0.04	0.31	0.39	0.38
5	95	Cauliflower	0.06	0.35	0.40	0.41
6	134	Zucchini Squash	0.15	0.39	0.41	0.43
7	142	Tomatoes (canned)	0.12	0.40	0.32	0.39
8	280	Beets	0.03	0.32	0.37	0.36
9	359	Stewed Tomatoes	0.03	0.36	0.38	0.39
10	396	Sliced Tomatoes	0.12	0.48	0.42	0.49
11	245	Eggplant	0.16	0.34	0.33	0.37
12	295	Succotash	0.05	0.37	0.33	0.39
13	300	Blackeye Peas	0.07	0.36	0.36	0.39
14	315	Rutabagas Turnip	0.07	0.21	0.11	0.18
15	43	Parsnips	0.17	0.20	0.19	0.26
16	53	Turnip Greens	0.14	0.43	0.44	0.44
17	372	French Fried Onion Rings	0.01	0.41	0.37	0.43
18	188	Sauerkraut	0.07	0.39	0.36	0.42
		TOTAL	0.08	0.43	0.40	0.44

			Breakfast	Midday	Evening	Total
VEGETABLE SALADS						
1	25	Pickled Beet/Onion	0.08	0.33	0.31	0.36
2	39	Cole Slaw	0.05	0.39	0.35	0.41
3	78	Lettuce & Tomato Salad	0.06	0.41	0.39	0.42
4	103	Carrot Salad	0.03	0.33	0.33	0.36
5	119	Carrot, Raisin & Celery	0.00	0.29	0.23	0.28
6	170	Tossed Green	0.05	0.44	0.46	0.48
7	171	Cucumber, Onion & Sweet Pep.	0.02	0.38	0.38	0.41
8	186	Frijole Salad	0.10	0.26	0.29	0.33
9	255	Tossed Cuc & Tom Salad	0.03	0.39	0.34	0.39
10	261	Tossed Vegetable Salad	0.02	0.39	0.38	0.41
11	272	Cabbage & Sweet Pepper	0.03	0.25	0.18	0.25
12	277	Lettuce Salad	0.03	0.42	0.40	0.43
13	281	Cucumber & Onion	0.05	0.36	0.35	0.38
14	314	Garden Cottage Cheese Salad	0.11	0.35	0.28	0.34
15	330	Vegetable Slaw	0.01	0.32	0.30	0.34
16	32	Potato Salad	0.00	0.24	0.25	0.26
17	114	Macaroni Salad	0.05	0.38	0.26	0.36
18	249	Chef's Salad	0.02	0.41	0.40	0.44
19	284	Kidney Bean Salad	0.04	0.38	0.30	0.38
20	327	Pickled Green Beans	0.08	0.26	0.21	0.29
		TOTAL	0.03	0.43	0.40	0.44
COMBINED TOTAL			0.22	0.34	0.32	0.39

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13. ABSTRACT During April 1971 a Food Preference Survey was administered to a large sample of enlisted personnel at Fort Lewis, Washington. The questionnaire consisted of 416 food items chosen primarily from the Armed Forces 42 Day Master Menu. For each item, the hedonic value was correlated with its score for preferred frequency of serving. The food items were categorized in menu classes (e.g. main dishes, vegetables, desserts) and by meals (e.g. midday meats, breakfast beverages, evening desserts, etc.). A statistical estimate of overserving and underserving was obtained by comparison of the soldier's preferred frequency of serving to the number of times it actually appeared in the 42 day Master Menu. Scales of preference frequency appear to be worthy of further investigation for use in menu planning.			

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